Developing online teacher communities to support communication and collaboration

Thesis

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DEVELOPING ONLINE TEACHER COMMUNITIES TO SUPPORT COMMUNICATION AND COLLABORATION

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Submitted in fulfilment of the requirements for the degree of
Doctorate in Education

Centre for Research in Education and Educational Technology (CREET)
The Open University
January 31st 2014

Date of Submission: 28 January 2014
Date of Award: 7 August 2014

Abstract

Glow, the Scottish arm of the National Grid for Learning (NGfL), was created to connect each of Scotland's 32 local authorities, schools, teachers and pupils, as well as key stakeholders through a secure intranet. Since the official launch of Glow in 2007 it has received a mixed reception amongst the teaching profession and engagement has been variable. This study set out to investigate Glow's use. The initial online survey of teachers' perceptions of Glow, in 2009, indicated that respondents were making little use of Glow. This led to a refocusing of the research to investigate a group of teachers who had a history of communicating online, with a view to understanding how teacher communities evolve online. A case study approach was adopted using a variety of methods including e-participant observations of their asynchronous discussion forums, questionnaires and interviews. The research builds on previous work on member Life-cycle models and online community models in order to describe and analyse this online teacher community. Key findings emerged related to the adequacy of existing models of online communities and the evolution of new modes of online interaction. Specifically, member Life-cycle models designed for open online communities do not fully describe the roles adopted in a closed teacher community. Furthermore, such models are inadequate to fully understand community development where members communicate offline as well as online. For this existing teacher community synchronous discussions appear to be increasing in relevance and popularity in comparison with asynchronous discussions. The implications of this for the next generation of Glow and online teacher communities are particularly relevant suggesting that focused synchronous discussion groups are an area for future research.

Keywords: Glow, NGfL, online communication, online collaboration, online communities, teacher communities

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AiFL	Assessment is for Learning- A Scottish Government initiative to introduce national strategy to introduce effective assessment to improve learning.
ATP	Approved Training Providers. Training providers approved to deliver the NOF ICT programme to teachers.
CfE	Curriculum for Excellence - A Scottish Government initiative to introduce a streamlined national curriculum.
CoP	Community of Practice
CPD	Continuing Professional Development- Teachers in Scotland are contractually obliged to undertake 35 hours of CPD each session.
EIS	Educational Institute in Scotland- One of Scotland's unions for teachers
FELR	A Learning Representative who works within a Further Education College to support Lectures within their own establishment. (EIS website- a)
Glow	National Grid for Learning in Scotland. Initially referred to as the Scottish Schools Digital Network (SSDN). Sister network to the National Grid for Learning
HMIe	Her Majesty's Inspectorate Scotland. Government body which inspects schools.
LTS	Learning and Teaching Scotland- organisation for the development of the Scottish curriculum. Funded by the Scottish Government.
MELR	A Learning Representative who works across a Local Authority. (EIS website- a)
NGfL	National Grid for Learning
NGfLS	National Grid for Learning in Scotland. Sister network to the National Grid for Learning
NOF	New Opportunities Fund. Money provided from the National Lottery to fund Government Initiatives.
SBLR	A Learning Representative who works within a school to support teachers within their own establishment. New SBLR stopped only MELRs to be recruited. (EIS website- a)
SETT	The Scottish Education and Teaching with Technology annual conference.
SULF	Scottish Union Learning Fund. A fund made available by the Scottish Trade Union Council to support union CPD activities.
ULR	Collective name for all Union Learning Representatives. All ULR (multi-establishment and further education must complete a six week introductory course with Stow College plus three month course with the University of West of Scotland (EIS website- a)

Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature:

Date: 15th August 2014

Acknowledgements

While many people have been instrumental in supporting me in the completion of my thesis there are a few who stand out as needing special recognition.

Although all of the staff at The Open University in Milton Keynes has been central in the completion of my EdD I would like to specifically acknowledge my supervision team. I would like to thank my principal supervisor Professor Peter Twining. I cannot express how vital your advice, support and unwavering patience has been in supporting me through this process over the last three years. I would also like to thank my second supervisor Sally Heany for providing a new and refreshing critical voice that allowed me to look at my work from a different perspective.

I would like to thank my colleagues in Scottish Education who completed the initial survey. Without your contributions there would have been no starting point to this thesis. I would like to thank the Educational Institute of Education in Scotland for allowing me to work with them over the last few years and study their online community. Thanks are also necessary to my colleagues in Lasswade High School for never ceasing in their support.

Finally, I would like to acknowledge the special role my family have played in supporting me. I would like to give special thanks to my husband Sean and my children Keira and Robbie for encouraging me when 'quitting' seemed like a sensible option. I would also like to thank my mum and dad, Lynn and Ronald Morecroft, for babysitting, proof reading and being on the end of a phone. And lastly, I would like to thank Arthur, our long walks together helped to clear my head; I guess a dog really is a woman's best friend.

Chapter 1: Introduction

This chapter begins by setting out the background to Glow in Section 1.1. Section 1.2 explores the purpose of Glow as described in the literature by the various stakeholders. Section 1.3 indicates the thesis aims and objectives. Section 1.4 details the significance and scope of this research. Finally, section 1.5 includes an outline of the remaining chapters of the thesis.

1.1 BACKGROUND

In 1985 the longest running virtual community The WELL, *Whole Earth 'Lectronic Link,* was launched (Chapman, 2009). Since then the number of social networking sites (SNS) has expanded exponentially (Reid and Gray, 2007). It is therefore not surprising that there has been a move to encourage teacher communities to develop online. As early as 1996 Tony Blair was planning a digital network. In his Party Conference Leader's Speech he envisaged a network that would bring about fundamental changes to education and society in Britain. He stated:

> Our aim is for every school to have access to the information superhighway, the computers to deliver it, the education programmes to go on it. With the university for industry, for adult skills, this adds up to a national grid for learning for Britain. That is the age of achievement come alive.
>
> Blair (1996, Para.39)

Following New Labour's election in May 1997 the proposal for a national grid for learning that would digitally connect all schools and colleges across the UK to the Internet would take its first steps towards reality. Recognising "the *distinctiveness of the Scottish education system*" (Campbell, 2000, p.1), the National Grid for Learning (Scotland) (NGfLS) was established as a sister network to the UK wide NGfL (McLeary, 2004). As was reported on the Scottish Government News release website at the launch of the NGfLS, the then Education Minister Helen Liddle announced:

> The National Grid for Learning will transform education in Scotland. Building the Grid and training people to use it will ensure that schools, colleges and public libraries play a key role in the development of an information based society.
>
> (Scottish Government, 1988, Para.4)

From this point on, regardless of future name changes and re-branding exercises the NGfLS, which evolved to become Glow, would be billed in Scotland as "*the world's first national intranet for education*" (Education Scotland, n.d a, Para.2).

However, Information Communication and Technology (ICT) initiatives and education have not always been happy bedfellows. Despite the impact that ICT has had on business and commerce a similar transformation has not occurred in education (Fisher, 2006). Indeed Luckin, Bligh, Manches, Ainsworth, Crook and Noss (2012) in their recent review of the impact and potential of digital technologies in learning argue that whilst there is no doubt that digital technology has impacted on education management the evidence that it has transformed learning and teaching is elusive. They go on to state that digital technology may add little value to traditional pedagogy. With the exception of a minority of subject specialists in secondary schools, the ICT industry appears to have failed to convince the majority of educationalists that their products can be used for more than shallow learning experiences with passive engagement for the learner, such as word processing and presentations (Levin and Wadmany 2005; 2006). Against this backdrop Glow was launched in 2007 at the Scottish Learning Festival (Learning and Teaching Scotland, 2010, p.18). It was claimed that it was a tool that "*is transforming the way the curriculum is delivered in Scottish state schools*" (Education Scotland, n.d. b, Para.1). Table 1-1 outlines the evolution of Glow.

Table 1-1. Evolution of the Glow network.

Date	Event
Oct 1997	UK Prime Minister, Tony Blair, launched the UK Government's consultation paper "*Connecting the Learning Society*" outlining NGfL proposals (DfEE, 1997).
Jan 1998	David Blunkett, Secretary of State for Education and Employment, launched the NGfL prototype at the British Education and Training Technology exhibition (Coughlan, 1998).
Mar 1999 – Jun 2002	Funding for the training of teachers and school librarians to use digital technology comes from the New Opportunities Fund (NOF) (Scottish Government, 2002a).
Aug 1998	NGfLS launched (Scottish Government, 2004a).
Sept 1999	NGfLS team appointed. Based at Learning and Teaching Scotland (LTS). NGfLS team covers the three key areas of infrastructure, training and content development (Scottish Government, 2002b).
May 2000	PricewaterhouseCooper's feasibility report concludes it is feasible to create a broadband network providing connection speeds of at least 2Mbps to all Scottish schools. The report recommended that this be achieved within the context of a Scottish Schools Digital Network (SSDN) (Scottish Government, 2004b).
December 2001	Scottish School Internet: proposed name *Spark* (Scottish Government, 2002c).
September 2001	The Scottish Education and Teaching with Technology annual conference (SETT) is launched supported by funding from NGfLS and organised by LTS (Scottish Government, 2004c).
October 2003	SSDN interconnect was completed in October 2003 linking all 32 Scottish Education Authorities, and other key agencies. Procurement of the SSDN intranet (to link schools) began (Scottish Government, 2004b).
2004-05 and 2005-06	Central government funding begins to be made available to Local Authorities to support ICT infrastructure necessary for SSDN (Scottish Government, 2004e).
Easter – November 2004	In line with the Digital Procurement Framework Agreement adopted in early 2003 digital content was procured (Scottish Government, 2004d).
Summer 2004	NGfLS websites and the LTS collection of websites were integrated to form the LTS Online Service (Scottish Government, 2004d).
April 2006	NGfLS formally ends and the Scottish Schools Digital Network (SSDN) comes online (Scottish Government, 2006b).
September 2005	The Scottish Executive awards RM £37.4m for the SSDN project (RM, 2005, Para.32).
Sept 2006	Glow - the new name for the SSDN is unveiled (RM, n.d., Para.21).
Sept 2007	Glow launched at the Scottish Learning Festival (Education Scotland, n.dc ,Para.3).

Date	Event
April 2010	National Consultation on the future of Glow launched (Frontline, 2011, p.6).
Summer 2010	Glow refresh: following feedback to the National Consultation, improvements rolled out including: forums, Glow light (new interface) and Glow blogs (Learning and Teaching Scotland, 2010).
Mar 2011	The Scottish Government publish *Scotland's Digital Future - A Strategy for Scotland.* This document indicated how the Scottish Government hoped to ensure that Scotland would optimise the potential of digital technology (Scottish Government, 2011b).
Sept 2011	Engage for Education, the Scottish Governments online platform for policy discussion publishes the Technologies for Learning Strategy. The strategy outlines 5 key objectives and states Glow is central in delivering them (Engage for Education, 2011).
July 2012	Education Secretary Michael Russell announces the establishment of the ICT in Education Excellence Group to look at the future of Glow (Engage for Education, 2012).
Jan 2013	The ICT in Education Excellence Group (2013) submit their final report on the replacement for Glow, Glow+, to Education Secretary Michael Russell (Engage for Education, 2013).

In an attempt to succeed where previous ICT programs have failed the NGfL initiative focused on the three areas of infrastructure, content and practice (Selywn, 2000). However, before the structure of the grid itself was established initial training was provided to get teachers 'ICT-ready':

> to bring all existing school teachers and school librarians up to a published standard of ICT expertise in terms of knowing when, when not and how to use ICT in learning and teaching.
>
> (Scottish Government, 2004c, Para.7.1)

In Scotland Ten Approved Training Providers (ATPs) were responsible for providing a training programme for all teachers to ensure that teachers felt confident enough using ICT within the curriculum (HMIe Scotland, 2002). The money to support this training was provided by the New Opportunities Fund (NOF), a National Lottery distribution body established by the UK Government (HMIe Scotland, 2002). The training came to be known as NOF training and many critiques have been written over the years documenting the dissatisfaction that teachers felt with this approach (e.g. Galanouli, Murphy and Gardner

2004; HMIe Scotland 2002). Even LTS, a non-departmental public body funded by the Scottish Executive Education Department, agreed that:

> the programme was considered to have been broadly successful in establishing baseline skills and raising awareness within the teaching profession of the increasing role of ICT in learning and teaching. It was, however, far short of the original aspiration of embedding ICT in classroom practice.
>
> (Public Sector News, 2004, Para.16)

In order to avoid the criticisms that followed the NOF training, the national strategic implementation plan for Glow was based on a top-down cascade model (Selwyn, 2000) similar to that of the Masterclass initiative in Scotland (Scottish Government, 2005). Having established an implementation plan what was now required was a purpose that each teacher could buy into.

1.2 A PURPOSE FOR GLOW.

The then First Minister of Scotland stated in his welcoming message to the Association for Learning Technology's 2006 conference that:

> [Glow] will enable teachers to: identify and collate content; share ideas and good practice; engage in online communities.
>
> (Jack McConnell MSP, 2006, p.III)

Since its launch in 2007 (Learning and Teaching Scotland, 2010) politicians from all parties have publicly stated their support for the network in a tone of political "*optimistic rhetoric*" (Reynolds, Treharne and Tripp, 2003, p.152). Glow has been linked to many Scottish Government educational initiatives in the first decade of the new millennium, for example the Curriculum for Excellence and Inclusion (Hyslop, 2009 Para.4; Donaldson 2004 p.12).

Indeed some classroom teachers have reported initial positive outcomes. For example Richards (2007) in her practitioner research reported some success implementing Glow in

her science classroom. However, rumblings of discontent have also appeared in the Times Educational Supplement Scotland (Seith, 2010).

Following a change of Cabinet Secretary and recent cuts to public sector funding, concern was raised by Education Directors about the future of Glow (Buie, 2010). Mike Russell, Cabinet Secretary for Education and Lifelong Learning, responded in TES Connect that "*Glow has made a good start but it must improve*" (Buie, 2010, Para.3). With its future in the balance in 2010, Glow was to see a major refresh and consultation process with its users regarding its future (Frontline, 2011).

In February 2011 a mixed report on the future of Glow was published by Frontline, a consultancy company recruited to undertake a national consultation on Glow in April 2010. Nine central conclusions were drawn from the consultation, but one of the main findings stated:

> Local Authorities and other stakeholders were enthusiastic about the potential of Glow and see value in how it can help them to connect with schools and with learners. Teaching staff and pupils have a more mixed view of Glow, largely because it is they who are tasked with using Glow in a school setting – across an extremely diverse environment.
>
> (Frontline, 2011, p.6-7)

When referring back to the literature the findings from this consultation are unsurprising. As far back as 2001 Watson undertook a critical analysis of ICT initiatives in the UK in an attempt to understand the problem of why ICT has failed to transform learning in schools. He concluded that a fundamental change was required away from a technological skills approach to an education that encourages teachers to engage in a pedagogic debate about how and when to utilise ICT. Watson (2001, p.253) identified a "*dichotomy of purpose*" among government ICT initiatives, which left teachers uncertain about why they were being asked to use technology. While Watson's work was looking at ICT in classrooms,

parallels can be drawn with Glow. Teachers were being asked by the Scottish Government to engage with Glow but were unsure why they were being asked to do so or whether the technology could deliver.

1.3 THESIS AIMS AND OBJECTIVES

The initial aim of the thesis was to investigate teachers' perceptions and beliefs about the nature and purpose of ICT and Glow, and how these related to their use of ICT and Glow. This aim gave rise to the following research questions for the initial study:

1. Are teachers' perception of the purpose of ICT and Glow in the curriculum related to their existing beliefs about the purpose and nature of education (as evidenced by their profile from the Woolley and Woolley (1999) Teacher Belief Survey)?
2. Are the types of computer use (Tondeur *et al.* 2008) regularly utilised by teachers associated with their existing beliefs about the purpose and nature of education (as evidence by their profile from the Woolley and Woolley (1999) Teacher Belief Survey)?
3. Is there is an association between teachers' beliefs about the purpose and nature of education (as evidenced by their profile from the Woolley and Woolley (1999) Teacher Belief Survey) and their understanding of their school's management vision for ICT and Glow?

Following analysis of the initial findings it became apparent that in 2009-10 teachers were making very little use of Glow. This resulted in a change in focus for the thesis to look specifically at a group of teachers who had a history of communicating online and who were about to move from using a standalone web hosted discussion forum to using Glow to support their online collaboration. The group of teachers identified for the case study were Educational Institute of Scotland (EIS) Union Learning Representatives (ULR). As the researcher had been an accredited EIS ULR since June 2005 this was a piece of

practitioner research (McCutcheon and Jung 1990). Practitioner research brings with it a number of opportunities and difficulties that will be explored in more detail in Section 3.5. Practitioner research can be defined as:

> systemic inquiry that is collective, collaborative, self-reflective, critical and undertaken by the participants of the inquiry. The goals of such research are the understanding of practice and the articulation of a rationale or philosophy of practice in order to improve practice
> (McCutcheon and Jung, 1990, p.148)

The aim of the case study was to arrive at a set of guidelines that could be adopted at each stage of the Life-cycle of an online community (Iriberri and Leroy 2009) to maximise the potential for success. The following research questions emerged from this aim

1. How can we develop a model to describe a voluntary online teacher community?
2. How can we explain the practice of a voluntary online teacher community?
3. What strategies can facilitate the development of other voluntary online teacher communities?

1.4 SIGNIFICANCE AND SCOPE

As evidenced by the literature (Section 2.2) and the outcomes of the initial survey (Section 4.1) there have been many problems associated with the implementation and effective use of Glow. Twining, Raffaghelli, Albion and Knezek (2013) argue that digital technology can support the development of online communities of practice that may allow genuine teacher collaboration to develop. However, identifying successful strategies to encourage the development of online teacher communities continues to be a problem (Twining *et al.* 2013). Based on the study of a group of teachers with a history of communicating online this study develops an enhanced framework for analysing teacher communities that operate online and offline. In addition it provides strategies for making more effective use of online technologies to support effective communication within such communities. Whilst

the findings from a case study approach grounded within the interpretivist paradigm are not intended to be generalised, the enhanced frameworks and suggested strategies have relevance to other similar professional contexts.

1.5 THESIS OUTLINE

A summary of the subsequent chapters is provided below.

Chapter 2: Literature Review

Chapter 2 critically analyses relevant literature and identifies gaps that this thesis has sought to address. It is divided into two parts, reflecting the shift in focus within the research. The first part looks at literature pertinent to teacher beliefs and their perceptions of technology and Glow, for example, critically reviewing Selwyn's early discussions on the implementation of the NGfL (1999, 2000, 2001, 2007), Fullan's (1996) work on managing change and Tondeur's work on implementing technology in classrooms (2007, 2008, 2009). The second part focuses on frameworks for, analysing online communities, including those of Kim (2000), Salmon (2004), Iriberri and Leroy (2009), Sonnenbichler (2009) and Sonnenbichler and Bazant (2012). This literature informed the research questions, methodology and data analysis.

Chapter 3: Methodology

Chapter 3 commences with a discussion of the interpretivist ontological and epistemological positioning of the research. This is followed by a discussion of the ethical considerations and professional conflicts negotiated during this practitioner research. It concludes with an explanation of how these ideas and philosophies informed the online survey and case study approaches adopted.

Chapter 4: Results

Chapter 4 begins by presenting the findings from the initial survey into teacher perceptions of the purpose and use of ICT and Glow. The findings from the initial survey show how this led to a refocusing of the research into a case study of an existing teacher community with an online presence. Data from e-participant observations, questionnaires and interviews were triangulated in order to determine how best to describe and explain a teacher community as it evolves online.

Chapter 5: Discussions of Findings

Chapter 5 provides an analytical discussion of the key findings presented in Chapter 4. This discussion is set within the context of implications for the wider teaching community. The chapter starts by discussing the findings from the initial survey, which focussed on teachers' views on and use of ICT and Glow. The main focus of the chapter is on the subsequent research questions related to teacher communities online, specifically:

1. How can we develop a model to describe a voluntary online teacher community?
2. How can we explain the practice of a voluntary online teacher community?
3. What strategies can facilitate the development of other voluntary online teacher communities?

Chapter 6: Implications and Conclusions

Chapter 6 begins with a brief summary of the research. It draws together the key findings from the initial survey and the EIS ULR case study, before outlining the implications of this work for the existing body of knowledge and setting out recommendations for future research.

Chapter 2: Literature Review

The Literature Review begins with an analysis of the research pertinent to teacher beliefs and their perceptions of technology and Glow and the management of change (Section 2.1). Following a refocusing of the thesis, as a consequence of the initial data analysis, the literature shifts to look at theories of building a successful online community, to inform our broader understanding of online teacher communities. This includes the following areas: Models for online communities (Section 2.2); Teacher online communities (Section 2.3); and Defining success in online communities (Section 2.4). The final section highlights the key literature that directly influenced the development of the conceptual framework that underpinned the Case Study (Section 2.5).

2.1 IMPLEMENTING ICT IN EDUCATION

Over the years a number of researchers have identified the main barriers to successful ICT integration in education (Goktas, Yildirim and Yildirim, 2009). These barriers have included lack of administrative support (Nantz and Lundgren, 1998); inadequate training opportunities (Beggs 2000); limited knowledge and skills by teachers, poor availability of technical support and time (Mumtaz, 2000); and a lack of software and hardware (Bullock, 2004). Cuban (1988) looked in detail at the nature of barriers to change and divided them into first order (extrinsic) barriers, and second order (intrinsic) barriers. Ertmer (1999, 2005) built on Cuban's work and applied this to the process of ICT integration. She discussed how first order barriers include lack of computer access, limited time, inadequate technical and administrative support. Second order barriers included a teacher's belief system, their teaching practices and willingness to embrace change. While these studies did not specifically relate to the NGfL they have consistently been found to apply to the implementation of ICT in education (e.g. Twining, Broadie, Cook, Ford, Morris, Twiner

and Underwood, 2006). Thus this body of work indicates that the barriers to the implementation of Glow are wide-ranging and complex.

Following the announcement of the NGfL back in 1997 a number of papers were published that sought to outline the aims of the Grid and the challenges that would need to be met for successful integration (e.g. Selwyn and Fitz 2001; Selwyn 2000; Selwyn 1999; Dawes 1999). Selwyn and Fitz argued that one of the core aims of the NGfL was for schools to become "*autonomous, empowered and confident consumers and users of ICT*" (2001 p.410). However, for this to be achieved significant changes would need to occur:

> the managerial and organisational changes needed to facilitate the eventual effective integration of ICT into the school setting requires a fundamental shift in cultures—and it is here that school leaders and managers perhaps face their biggest challenge in getting the NGfL 'to work'
>
> (Selwyn and Fitz, 2001, p.412)

This notion of managerial and organisational change resonates with the second order barriers described by Ertmer (1999, 2005) and explored by Hixon and Buckenmeyer (2009) in their study of technology integration in American schools. This indicated that while infrastructure and content are important, other challenges needed to be met to implement Glow. Similarly, as Cuban argues, while practical considerations are important these are not the critical factors in ensuring effective implementation and integration:

> Policymakers and administrators must understand teachers' expertise and perspectives on classroom work and engage teachers fully in the deliberations, design, deployment, and implementation of technology plans.
>
> (Cuban, 2001, p.183)

This suggested that changes to existing educational and professional practices would be required to bring about the implementation of Glow and develop online teacher communities. However, as Fullan (2007) notes large scale educational change is not easy to engineer:

> The main dilemmas with large-scale reform are all a variation on what I call the too-tight / too-loose problem. Top-down change doesn't work because it fails to garner ownership, commitment, or even clarity about the nature of the reforms. Bottom-up change – so-called let a thousand flowers bloom - does not produce success on any scale
>
> (Fullan, 2007, p.11)

For Glow to be fully implemented then it may require schools and teachers to change their existing practices in a coherent and organised process. In order to understand how this change could be achieved a review was undertaken of the extant literature on educational change models.

Orlando's (2009) longitudinal qualitative study of ICT integration argued understanding the wider context of the school was critical in order to understand the behaviour and actions of teachers. Certainly the link between organisational culture and individual actions has long been a topic of interest. Schein introduced the concept of organisational culture and proposed it could be utilised to model institutional change. He discussed how organisational culture is a product of social learning that can translate into concrete behaviours that impact on practice:

> Organisational culture is the pattern of basic assumptions that a given group has invented, discovered, or developed in learning to cope with its problems of external adaptation and internal integration, and that have worked well enough to be considered valid, and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems
>
> (Schein, 1984, p.3)

However, he goes on to argue that understanding the nature of an organisation's culture is complex, as we need to go beyond the 'visible artefacts' and look at the 'underlying assumptions' of the group (Schein, 1984, p.2). Schein (1984) proposes that by analysing how new members are initiated into the group; their responses to critical incidents; the beliefs, values and assumptions of the group; and lastly, by exploring anomalies with insiders, we can understand the group's culture. Understanding the culture of an

organisation is important as it provides insights into how the group will be predisposed to manage change. Schein (1984) argues that organizational culture and leadership are linked, as it is the leaders within an organisation who create and drive its culture. Maslowski provided a similar definition that specifically pertains to the cultural of a school as "*the basic assumptions, norms and values and cultural artefacts that are shared by school members, which influence their functioning at schoo*l" (Maslowski, 2001, p.8-9).

Fullan argues that "*collegiality among teachers . . . is a strong indicator of implementation success*" and that this can be "*measured by frequency of communication, mutual support, help*" (Fullan, 2001, p. 71). However, when looking at collegiality as a mean to drive change Hargreaves distinguishes between "*contrived collegiality*" and "*collaborative cultures*" (Hargreaves, 2003). Contrived collegiality involves artificially, often top-down, initiated approach whereby management impose a collegiate implementation structure. Collaborative cultures involve self-identifying support groups that come together. Hargreaves' collaborative cultures link to the '*Professional Learning Community*" described by DuFor as a forum where teacher's work collaboratively to improve student learning (2004, p.8). Collectively this body of work argues that understanding the perceptions teachers have of their school's culture is critical to understanding the barriers and enablers to Glow.

Were Schein (1984), Masalowski (2001) and Orlando (2009) looked at group culture; Fullan (1996) discussed the importance of looking at the individuals within that group. Fullan (1996) argued that rather than trying to achieve systemic reform that focuses on the system as a whole we should instead look to achieve systematic alignment. Systemic alignment focuses on the individuals that make up that system first, before looking at the system as a whole. He argued that by not looking at individuals we are in danger of preventing the change we seek to make by creating overload and fragmentation:

> Overload is the continuous stream of planned and unplanned changes that affect the schools. Educators must contend constantly with multiple innovations and myriad policies, and they must deal with them all at once . . . Fragmentation occurs when the pressures -- and even the opportunities -- for reform work at cross purposes or seem disjointed and incoherent
>
> (Fullan, 1996, Para.2)

Fullan (1996) went on to suggest that in order to avoid overload and fragmentation consideration needs to be given to implementing changes at the bottom of the system as well as the top. This can be achieved through two key strategies: networking and reculturing / restructuring.

Fullan (1996) argued networking is predicated on two principles. First, by involving as many people within a school as possible in the change process there is more likelihood that a critical mass will be reached and that the implementation will be successful. Second, people need supportive structures within schools to build the capacity to support changes. However, rather than relying on traditional support networks that may exist within a school (for example, friends or within departments) new networks should be constructed so that people are interacting outside their existing comfort zones.

The second strategy restructuring / reculturing is described as follows:

> Reculturing refers to the process of developing new values, beliefs, and norms. . . Restructuring concerns changes in the roles, structures, and other mechanisms that enable new cultures to thrive
>
> (Fullan, 1996, Para.25).

Reculturing involves teachers learning new instruction methods and adopting a new model of professionalism. Closely linked to reculturing is the strategy of restructuring. This is the process through which these new cultures can evolve.

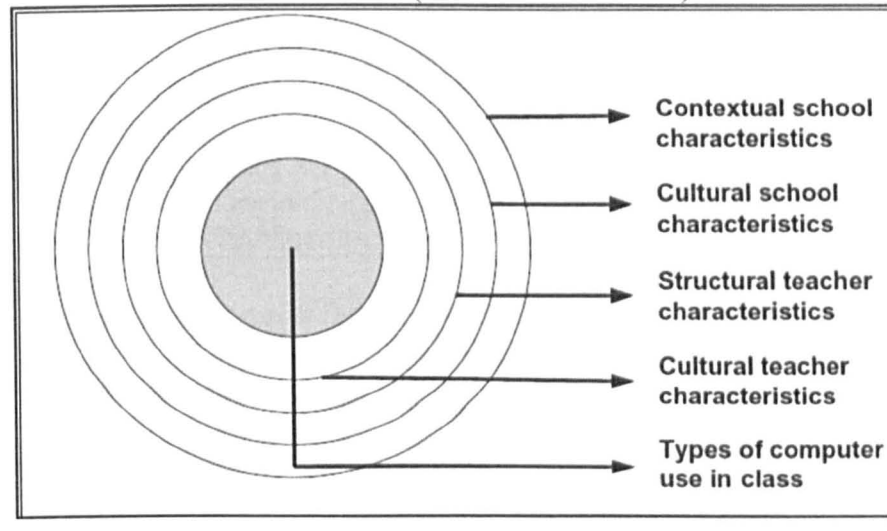
However, there are some limitations to Fullan's (1996) argument. First, schools are composed of multiple networks. Fragmentation can still occur as an individual could be a member of many or no individual groups. The extent to which these networks communicate with each other would determine if the school community as a whole could be described as fragmented or cohesive. Second, new networks do not necessarily replace old structures. Instead they may be "grafted on". This means that old networks that are not 'fit for purpose' could still exist. In essence (social/human) networks can facilitate change or they can actively work together to resist it. The extent to which there is facilitation or resistance will ultimately impact on the success or failure of any change process.

Fullan's (1996) theory contrasts with the work of Frank, Zaho and Borman (2004) who applied the theory of social capital to conceptualise the process through which informal access to social networks in schools can help implement ICT innovations. Frank *et al.* (2004) suggested that through the social networks that exist within a school, technological change could be communicated. The informal access to expertise within a school and the social pressures to use ICT could be considered a manifestation of social capital and, as such, could act as an agent for change.

However, when considering this informal access to networks we can see limitations of this approach. Primarily Frank *et al.*'s (2004) approach is grounded in the idea of informal networks. This raises a number of questions. How can an 'outsider' gain access to this network, or indeed be aware that this network even exists? Furthermore, a prerequisite of Social Capital theory is the implied shared belief system amongst members of a school, which may not necessarily exist. Or, if it does exist, could operate as a barrier to implementation as opposed to an enabler. If the network were to act in opposition to the initiative then you could arrive at a situation where success would be less likely to happen, rather than more.

As was highlighted earlier by Selwyn and Fitz, a "*fundamental shift in culture*" could be necessary to implement Glow and this could present school leaders with a significant challenge (2001, p.412). Certainly recent research does suggest a link between school cultures and computer use in classrooms (e.g. Wachira and Keengwe 2011; Keengwe, Onchwari and Wachira 2008). Tondeur, Devos, Van Houtte, van Braak, and Valcke (2009), in their investigations into the extent to which the '*structural and cultural*' characteristics of a Belgian primary school influenced the individual teacher's use of ICT in the classroom, found a direct correlation between the two. They surveyed 527 teachers in 68 primary schools with the aim of investigation their perceptions of the structural and cultural characteristics of their school and correlated this with each teacher's reported classroom ICT use. Their findings informed the development of a visual representation of the factors that influence the types of computer use children experience in classrooms as detailed below in Figure 2-1.

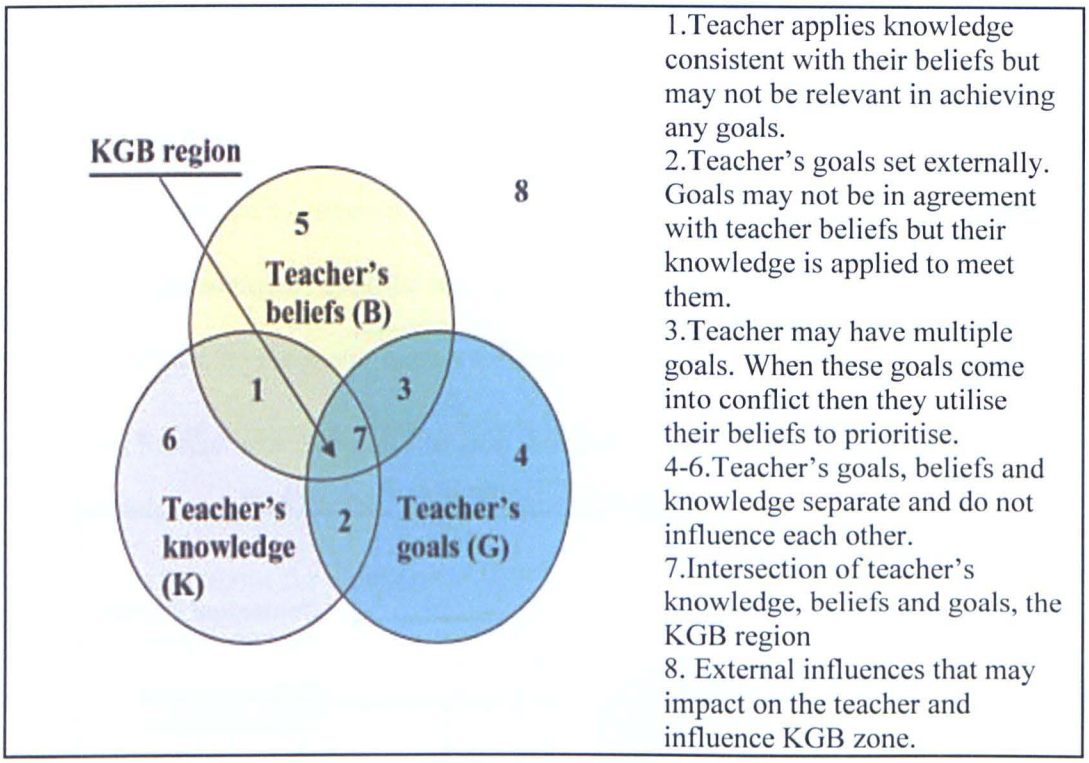
Figure 2-1. Conceptual model of determinants of computer use: school and teacher characteristics (Tondeur *et al.* 2009)



This diagrammatic representation of their findings suggested that actual computer use in the classroom is directly influenced by the skills and values of the teacher and also the structural and cultural characteristics of the school in which they operate.

These findings aligned with those of Chen and Chen (2009) who investigated the interplay between a teacher's knowledge, beliefs and goals (either internally or externally applied) and the implications for ICT integration. They undertook a one-year case study of two teachers as they implemented technology in their classrooms and found that support from colleagues and researchers was an important factor in successful implementation. Their findings resulted in a visual representation of how teacher knowledge, beliefs and goals (intrinsic or extrinsic) interact when implementing technology (Figure 2-2)

Figure 2-2. Visual conceptualisation of teachers' knowledge, goals and beliefs (Chen and Chen, 2009).



However, while Chen and Chen (2009) also suggested that external factors are important, they proposed that we need to investigate in more depth the individual knowledge, goals and beliefs of the individual teacher in addition to the organisation in which they operate.

The literature above explores the general theories of educational change. There is also a body of literature (Selwyn and Fitz 2001; Selwyn 2000; Selwyn 1999) that explicitly explores the ramifications of change theories for the implementation of technology and Glow in schools and classrooms. The findings can be summarised as follows:

- In order to integrate Glow schools will need to ensure that all members of a school have the opportunity to buy into the implementation plan.
- Without careful consideration of the multiple initiatives and demands being placed on schools and staff overload can result with low morale and dissatisfaction following.
- The creation of supportive human networks (groups) can be a transformative lever to enable the implementation and integration of Glow into the life of the school. However, care needs to be given to ensure such networks (groups) do not work against existing school structures resulting in fragmentation and that such groups do not act as vehicles to support resistance to the change.

In summary, when thinking about the implementation of any technological change, such as the effective use of Glow within Scottish schools, one needs to be aware of issues at a variety of different levels, such as the individual, school and the wider context. The focus of the initial research looked at the individual level, finding out about teachers' views of technology and Glow, and how they were using it. This suggested three survey focus areas; teacher beliefs, ICT and Glow use, and perceptions of school culture. This was informed by:

- Pierce and Ball's (2009) work, which looked at ICT implementation in order to determine if there is a link between teacher beliefs and ICT use. They postulated that teachers adopt the pedagogy that is most in tune with their existing beliefs system.
- Chen and Chen's (2009) work which investigated the interplay between a teacher's knowledge, beliefs and goals (either internally or externally applied) and the implications for ICT integration.
- The influence of the externally applied goals mentioned by Chen and Chen (2009), which aligns with the work of Tondeur *et al.* (2009) who explored teachers'

perceptions of the organizational culture within the school and how this impacts on their ICT use.

The data acquired was then linked to the initial study research questions presented in Chapter One. The full survey and coding along with academic influences is presented in Appendices 1 and 2.

Following analysis of the initial survey data it became clear that respondents were making very little use of Glow, irrespective of their beliefs, perhaps resonating with the ideas of fragmentation and overload raised by Fullan (1996). This led to a change in focus for the research, to look specifically at a group of teachers who had a history of communicating online. The remainder of this chapter therefore focuses on critically analysing the literature pertinent to online communities.

2.2 MODELS FOR ONLINE COMMUNITIES

One of the earliest definitions of an online community is attributed to Rhinegold (1993) and relates directly to his involvement with The Well:

> Virtual communities are social aggregations that emerge from the Net when enough people carry on those public discussion long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace
>
> (Rhinegold, 1993, Para.27)

More recent definitions add little to Rhinegold's earlier definition and seem to suggest that we have indeed arrived at a commonly accepted classification of what constitutes an online community. For example a more recent definition proposed by Schneider, von Georg and Jäger state:

> Online communities (OCs) are virtual social groups with a set of members who contribute to a varying extent to a common activity and/or good according to behavioural scripts
>
> (Schneider *et al.*, 2013, p.293)

Schneider *et al.* (2013) adopted this definition of an OC as they undertook research into the phenomenon of how "*lurking and curiosity may interact*" (p.293). Like Rhinegold's definition we see the emphasis on social groupings and a common purpose.

However, establishing a definition of what an OC is only tells half the story. It is then incumbent to look at how you can describe one. A number of models have been put forward to describe online communities. One of the more prominent is the Community of Practice (CoP) model.

Wenger and Lave (1991) first proposed the concept of 'Community of Practice' in their study of situated learning, although this was not in the context of online communities. Wenger (1998, p.1) went on to develop this concept further and described a CoP as being composed of three key elements:

- Domain: shared sphere of interest and expertise.
- Community: engagement with others that share these interests and expertise.
- Practice: through this engagement they develop shared repertoire of resources.

More recently, Wenger, McDermott and Snyder (2002) developed the concept of Community of Practice (CoP) as a vehicle for learning:

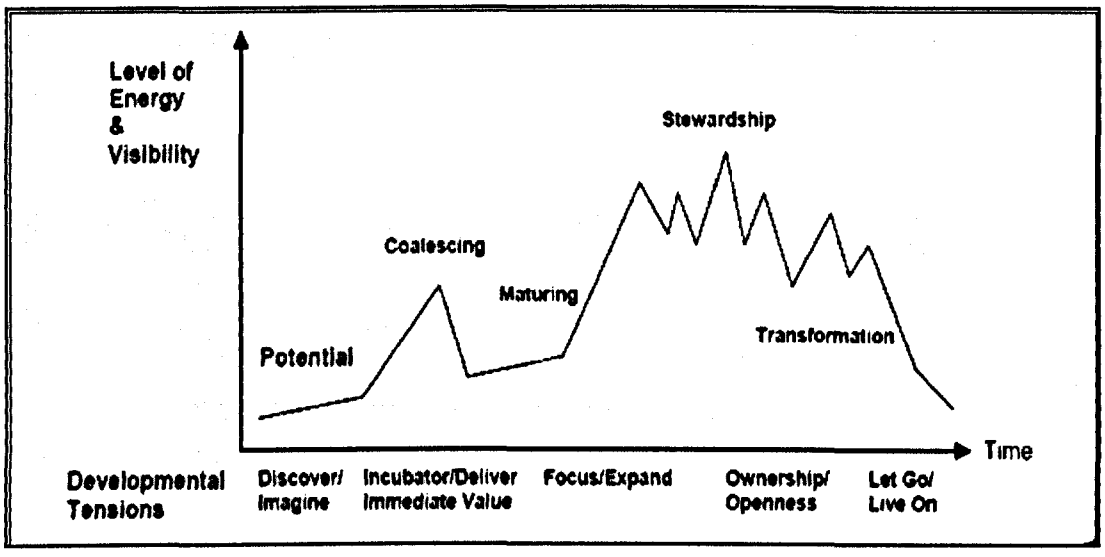
> Communities of practice are groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an on-going basis
>
> (Wenger *et al.*, 2002, p.4)

By combining these three ideas we see the creation of a Community of Practice. For Johnson (2001, p.49) the "*key component of communities of practice is community knowledge*". He goes on to develop this further by arguing that "*individual knowledge and collective knowledge should support each other*". Although from socio-culturist's

perspective there is no such thing as individual knowledge, all knowledge is socially constructed (John-Steiner and Mahn, 1996).

Wenger *et al.* (2002) outline five stages of development for such a community, which are underpinned by seven key principles (Figure 2-3).

Figure 2-3. Stages of community development (Wenger *et al.* 2002, p.69)



At the Potential stage the community *per se* does not exist, just the concept that a CoP could be advantageous to a group. It is only at the Coalescing stage that we begin to see the actualisation of the community as trust is created and knowledge is shared. As the CoP enters the Maturing phase we see evidence of community elders and gaps in knowledge are identified. In the Stewardship phase we begin to see momentum building within the CoP. Roles change as Elders leave to be replaced by new members. The final stage, Transformation, is perhaps the most interesting because it is at this stage that the CoP may die or be re-born with a different focus as the needs of the members change.

Since the turn of the millennium there have been two significant drivers that have raised the profile of the concept of CoPs (Merchant, 2012; Wenger, 2002). First, while CoPs have existed for hundreds of years there have been increasing moves to capitalise on this concept and formalise it within organisations (Wenger, 2002). A second driver has been

the move to capitalise on the Web. Where historically social networks relied on face-to-face communication, Web 2.0 technology can provide another dimension to this as individuals can now meet online (Merchant, 2012). These drivers have combined to result in an increased interest in this area.

Agrawal and Joshi (2011) in their literature review of publications focusing on CoPs (virtual and physical) found that the concept has been extensively used and researched over the last two decades. Their review concluded that with the right supports CoPs can be intentionally created to support organisations' goals. For example, Cesareni, Martini and Mancini (2011) in their case study of the creation of a community of practice consisting of teachers, researchers and university students found that by connecting individuals in line with social constructivist theory innovative pedagogy is more likely to result.

However, a number of critiques of the CoP model as applied to online groupings have been published (e.g, Roberts 2006; Handley, Sturdy, Fincham, and Clark, 2006). Jones and Esnault (2004) proposed an alternative metaphor to describe groups of people who work together online, "*networked learning*". Drawing on research from Centre for Studies in Advanced Learning Technology (CSALT) networked learning is defined as:

> learning in which information and communication technology (CandIT) is used to promote connections: between one learner and other learners, between learners and tutors; between a learning community and its learning resources
>
> (Jones and Esnault, 2004, p.1)

They argue that the network metaphor provides a better description of networked learning because it does not focus solely on the strong ties and relationship implied in the CoP model but encompasses all ties, including weak ones. (Although a counter argument could be that the CoP framework does not adequately model networked learning because it has a wider focus than learning). Additionally, the underpinning theory of CoP can accommodate

weak ties – the notion of people being on trajectories moving in to the CoP and then out again. CoPs are dynamic, with membership evolving over time – ties getting stronger and weaker for both individuals and the collective community (Haythornthwaite, 2005).

In turn Ryberg and Laresen (2008) have critiqued the work of Jones and Esnault (2004). Based on their analysis of a Dutch social networking site for teenagers they suggested that the network metaphor and the CoP model are not as polar opposites as previously portrayed. They go on to argue that while the metaphor of networks and strong and weak ties still has its limitations, understanding meaning making and networked identities may help to address them.

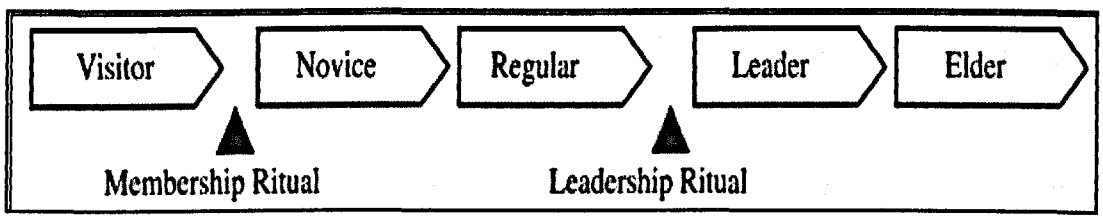
Preece proposed an alternative model for online communities on the basis of the following four criteria: people, shared purpose, policies and a computer system (2006, p.10). She argued that an OC could be described by looking at the extent to which attributes such as purpose, resources, support and activities are shared. Looking at the purpose of an online community we have to ask the question 'what is it being used for?' Does the community exist to disseminate information, talk shop or collaborate (DiMauro, 2011). Preece (2006) also argued the extent to which the OC was linked to a physical community would have significant implications for how the community functioned. A community that only met on the web would operate differently from one where members also met face-to-face.

From a review of the literature describing online communities we can summarise the following. An online community may be a community of practice or it may be a looser network. This can only be determined by looking at the attributes of that community, strength of ties between its members and the flow and nature of information exchanged. An alternative framework that can aid the exploration and description of the members of an

online community is described by Kim (2000). Her community membership model specifically looks at the roles an individual may adopt online.

Kim (2000) provides what is perhaps a less well-theorised model of online communities, drawn from her experience supporting the development of commercial online open communities on the web. She linked this model with nine strategies for building online communities. Kim describes these nine design strategies for community building online as '*social scaffolding*'. These strategies include: purpose, places, profiles, roles, leadership, etiquette, events, rituals and subgroups (2000, p.xiii-xiv). Kim (2000) focused on the individual and their desire to join the community proposing a membership lifecycle in which "*communities are held together by a web of social ritual*" (p.117). In this model a visitor can join a community and progress to being an elder (Figure 2-4).

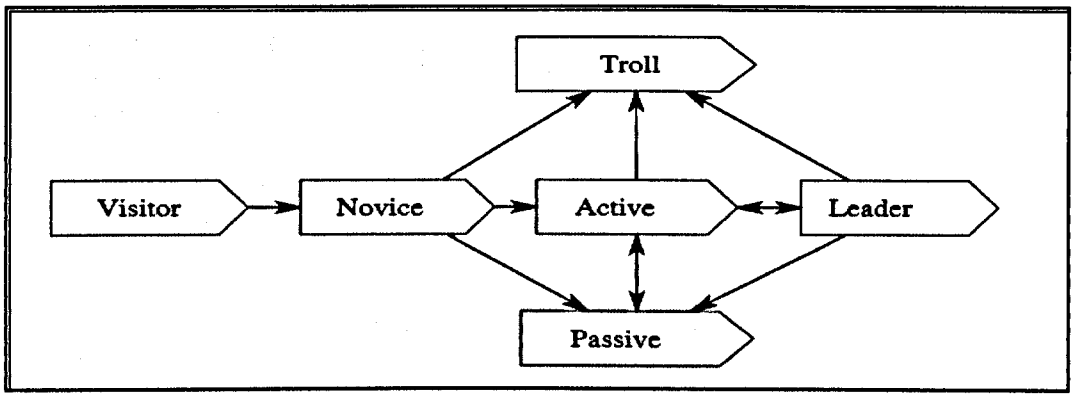
Figure 2-4. Membership lifecycle (Kim, 2000, p118)



Rituals play an important part of this model. They are the points where an individual moves from one significant role to another. Members may require specific motivation from community leaders to change their role but in order "*to grow a dynamic and successful community you must continually convert novices to regulars*" (Kim, 2000, p.140). So for example, Kim (2000) argues the 'membership ritual', or reward, when a person moves from visitor/lurker to novice can be as simple as a welcoming email. This recognition can motivate the individual to stay within the community and eventually accept new roles. This is important because, as Ren, Harper, Drenner, Terveen, Kiesler, Riedl and Kraut (2012) argue, the retention of active members is a significant worry for OCs as if too many people leave the community will ultimately fail.

Kim's (2000) model has similarities to Sonnenbichler's (2009). The key differences being that he omits reference to an elder status and has introduced the roles of Troll and Passive, recognising an individual who may disrupt a community and one that may be a consumer and not a producer of content (Figure 2-5).

Figure 2-5. Member model (Sonnenbichler, 2009)



A further difference is centred on Sonnenbichler's inclusion of specific criteria to assign member roles (Sonnenbichler 2009; Sonnenbichler and Bazant 2012):

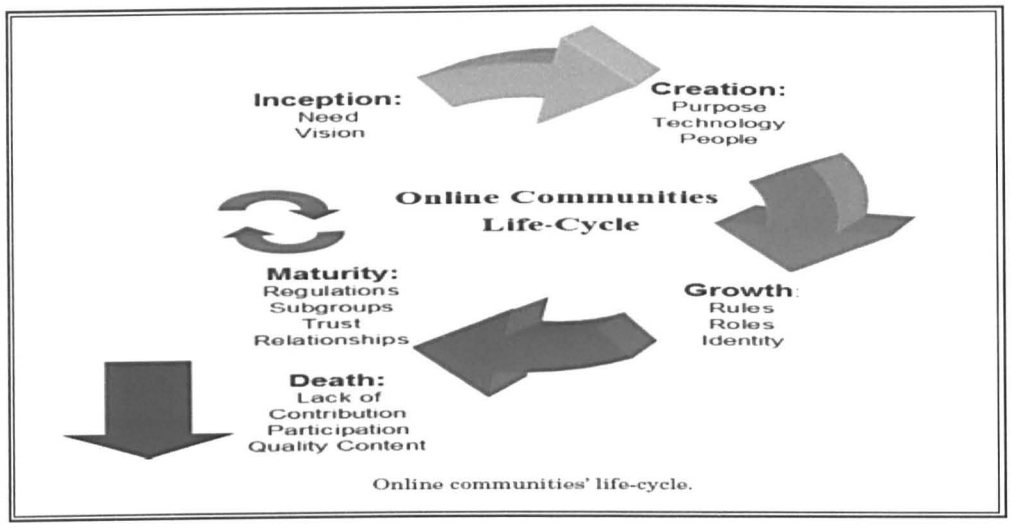
- Visitor : "*a user before signing up to the service*" (Sonnenbichler, 2009, p.7).
- Novice: "*A user who has been classified as active, troll, or passive will not be able to be classified as novice (again)*" (Sonnenbichler and Bazant, 2012 p.305)
- Active "*An active member must post at least one message within two weeks*" (Sonnenbichler and Bazant, 2012, p.304).
- Passive: "*Members are classified as passive if no posts were observed during the last 2 weeks*" (Sonnenbichler and Bazant, 2012, p.304).
- Troll: "*Wants to disturb the community, very active in a short time period, mainly information producer*" (Sonnenbichler, 2009, p.7)
- Leader : Above average level and frequency of posts (Sonnenbichler and Bazant, 2012, p.304).

This begs the question about the extent to which these models could provide a conceptual framework to develop further understandings of the evolution of an online community. Nimrod (2012) utilised the work of Kim (2000) and Sonnenbichler (2009) to explore membership Life-Cycles in online support groups for individuals who experienced mental health problems. Data were collected from volunteers via an online survey. Volunteers were asked to self-report how often they visited the online support groups, interest in the topics posted, and their perception of their mental health and the benefits they gained from going online. As the survey was anonymous there was no opportunity to cross-reference actual use with reported use. Furthermore as the study was conducted over a short timeframe there was no opportunity to track in more detail how member roles could change over time as could happen with a longitudinal study. However, Nimrod did identify the emergence of member roles. This suggests that the models of Kim (2000) and Sonnenbichler (2009) would provide valuable insights into the roles that teachers adopt in a closed OC.

However, what the models of Kim (2000), Sonnenbichler (2009) could not do was to provide insights into the *nature* of the interactions that occurred in the OC. In contrast to the work of Kim (2000) and Sonnenbichler (2009), which focused on the Life-cycle of the individual, Iriberri and Leroy (2009) focused on the community as a whole.

Following a search of the literature Iriberri and Leroy (2009) felt that while many researchers had identified a number of factors that could contribute to success in an online community nobody had tried to develop "*Integrated and sequenced implementation guidelines*" (p.11-2) that could ensure success for the variety of different online communities that are seen on the Web. Based on their review of the literature they arrived at a Five Stage Lifecycle Framework (Figure 2-6).

Figure 2-6.Information systems lifecycle framework (Iriberri and Leroy, 2009)



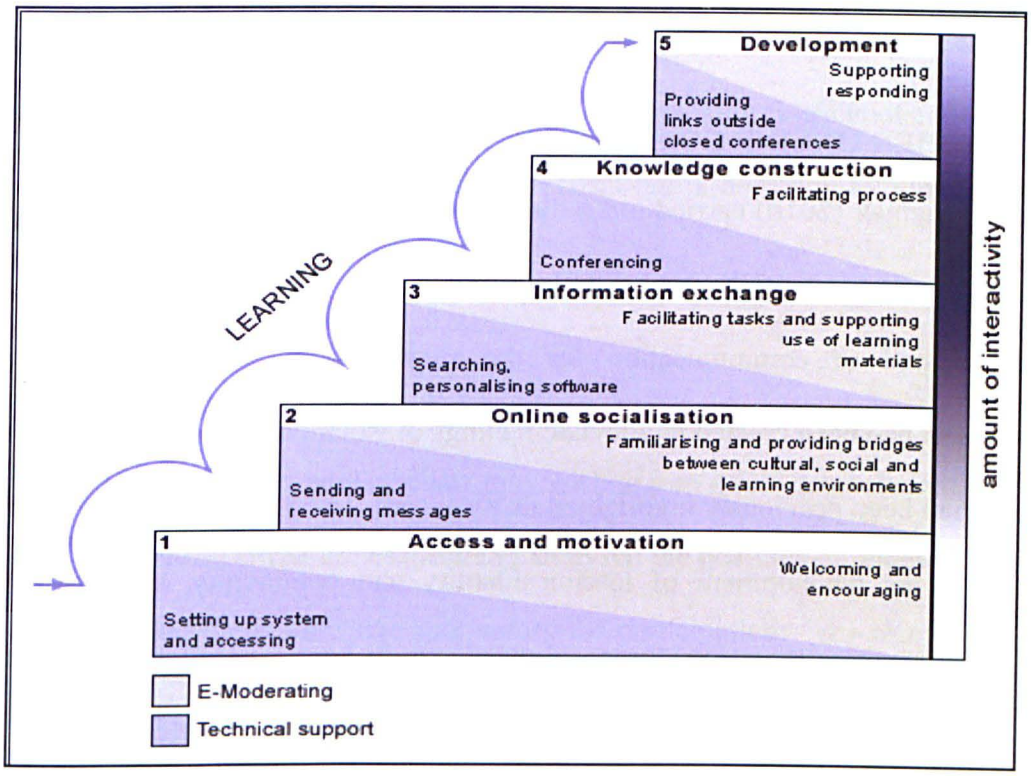
Each stage was associated with related success strategies. The strategies were based on the principle of "timed stages" (Iriberri and Leroy, 2009, p.11-17) (Table 2-1).

Table 2-1. Timed stage success strategies

Stage	Description	Success Strategies
Inception	A purpose for the community is identified.	Purpose – shared goals Focus – target community Codes of conduct Trademark - identity Funding – revenue source
Creation	Technology for the community put in place. Members join.	User centred design and evolution. Interface usability. Security and privacy. Reliability and performance of technology.
Growth	The community grows. Behavioural scripts, norms and values emerge. Members begin to move into their roles (at a conscious or sub-conscious level).	Quality content Attracting new users Integrating new users into group. Developing trust – ensuring transparency Encouraging interaction
Maturity	More formal and explicit organisation of the OC may be needed. Changes may be seen in the membership profile of the group as older members leave and new join. In a surviving OC this would be cyclical in nature as the group regenerates. If the group does not regenerate it leads to death.	Regular online events Permeated control Subgroups Rewards – recognition of contributions
Death	Lack of growth. Members leave, become passive and the community dies.	Limited content Poor participation of members Members with weak ties Privacy and security concerns Lacking confidence to post Time constraints Unwilling to share information / resources

There are some similarities between Iriberri and Leroy's Lifecycle Framework and Salmon's (2004) Five-stage model. Salmon's (2004) model is a "scaffolding" based approach that is designed to promote student interaction and participation in the context of a taught course (Figure 2-7).

Figure 2-7. Five-stage model (Salmon, 2004).



This model is premised on the basis that it is hierarchical in nature with the participants moving up from stage one through to five as they acquire the necessary skills and attributes. There is an implication here that all participants begin at a similar level. Though it could be argued that members who come with certain 'skills and attributes' would pass through the lower stages much faster in a new community. However, this model does not address the issue of the motivation of the individual to engage.

While this model was designed to apply to formal e-learning environments Salmon has argued that the model can be adapted to other less formalised learning contexts (2013). Primarily she argues that a structured model for the development of an online community

can provide the social scaffolding for participants to feel confident using the technology. This confidence is integral to building a successful community. Indeed, the activities that Salmon suggests at each level mirror the strategies suggested in Kim's (2000) model in that the central argument is concerned with supporting the community by supporting the individuals that make it up.

Other researchers have looked specifically at online teacher communities.

2.3 TEACHER ONLINE COMMUNITIES

Irwin and Hramiak (2010) carried out a discourse analysis of an online discussion forum for trainee teachers in a UK teacher training institution. The discussion forum was the primary method of communication for the student teachers during their teaching placements. It had been created to alleviate feelings of isolation during their placements, an issue that had been previously highlighted as a concern. Irwin and Hramiak (2010) found evidence of the development of teacher identity and community support. They also suggested that the discussion forum allowed group communication and community building that would have been difficult to engineer in the physical world given the students were geographically dispersed while on teaching placements. It was also suggested that the technology may have contributed in some part to the identity they constructed. Their work suggested that online teacher discussion forums can be valuable to geographically dispersed groups.

Parks (2010) also undertook an analysis of a discussion forum for trainee teachers on teaching placement in Quebec. Parks did not look at the discussion forum posts but carried out a questionnaire and semi-structured interviews in order to investigate the thoughts of the teachers regarding the online forum. The study findings suggested the trainee teachers

viewed the forum positively and felt it had been a valuable tool in their professional development.

Prestridge (2010) analysed archival posts from an online discussion forum for evidence of community development. 16 Australian teachers participated in an ICT professional development programme online forum for a year. Prestridge found evidence of collegial and critical discussion. She argued that the collegial discussion was pivotal in building the community but the critical discussion was pivotal for transforming beliefs. However, the levels of critical discussion were limited as teachers had a tendency to adopt the default role of lurker.

The examples above relate to formalised online teacher communities. Hur and Brush (2009) examined the reasons why teachers may wish to join a self-generated online teacher community. They interviewed 23 teachers and analysed the postings on three communities. They concluded that there were five motivators for participation: *"(a) sharing emotions, (b) utilizing the advantages of online environments, (c) combating teacher isolation, (d) exploring ideas, and (e) experiencing a sense of camaraderie"* (2009, p.1). These motivational factors reflect the findings of Hara and Hew (2007) who examined the reasons that motivated teachers to share knowledge online and the type of knowledge that they shared.

Drawing together the findings from this literature in relation to online teacher communities there appears to be something of a paradox. In general teachers appear to self-report positive feelings towards online forums. However, analysis of activity suggests limited critical discussion and a tendency to adopt a lurking role. This raises a question about how one would define a 'successful online community of teachers'.

2.4 DEFINING SUCCESS IN AN ONLINE TEACHER COMMUNITY

Defining success in an online community is a difficult task. The models discussed thus far might be seen as viewing success in terms of participation in the community or progression from low level interaction (e.g. online socialisation) to higher level interaction (e.g. knowledge construction). However, the subjective nature of success means it can be difficult to arrive at an agreed understanding of what constitutes success. Iriberri and Leroy in their literature review of online communities aimed at developing "*integrated and sequenced implementation guidelines*" (2009, p.11-12) suggested that when defining success:

> The most common metrices used in the empirical research we reviewed were volume of member's contribution and quality of relationships among members.
>
> (Iriberri and Leroy, 2009, p.10)

Preece introduced the sociability and usability framework as a tool to describe the success of an online community:

> The framework for sociability (i.e. purposes, people, policies) and usability (i.e. dialogue and social interaction support, information design, navigation, access) provides a basis for identifying characteristics and measures that help to describe success of online communities
>
> (Preece, 2001, p.350).

She went on to argue that sociability could be identified by looking at measures such as number of messages per unit time, participants, member's satisfaction, reciprocity and trustworthiness. Usability could be identified by looking at measures such as number of errors using the interface, user productivity and user satisfaction (Preece, 2001). The framework is useful for two reasons. By looking for evidence of these determinants we can measure the success of a community. But, more importantly, by designing a system that encouraged sociability and usability then we would have a greater chance of creating a successful online community in the first place.

Verburg and Andriessen (2006) constructed the Community Assessment Toolkit (CAT) as a tool to evaluate the success of a CoP. They looked at success indicators relating to the ability of Community Leadership to organise meetings, stimulate participation, facilitate knowledge sharing, make contacts out with the group, and promote interesting external activities. Another example of a formalised tool is provided by Corallo, De Maggio, Grippa and Passiante (2010). In their study of a virtual learning community designed to support an Engineering Masters programme they developed a framework to evaluate the community performance. They argued that by measuring "*knowledge improvement, mental models evolution, social network dynamics and overall satisfaction*" they could monitor the development of the network (2010, p.135).

More recently a number of researchers have used content analysis to look at the nature of the discussions taking place (e.g. Redmond 2012; Yang, Richardson, French and Lehman 2011). Content analysis has not been without its critics. De Wever, Schellens, Valcke and Van Keer (2006) in their review of a number of content analysis instruments suggested that the theoretical and empirical base of existing instruments needed to be strengthened in order to improve the quality of research. However, it can provide insights into the nature of the interactions taking place.

Weltzer-Ward (2011) carried out a systematic literature review of papers pertaining to the analysis of educational asynchronous discussion forums. Her review concluded that the most frequently adopted methodology was content analysis. She identified 56 different coding schemes. The schemes provided codes to investigate critical thinking, describing social interactions and characterising the online discussions. Grounded in the methodology of content analysis Nandi, Hamilton and Harland (2012) devised a coding scheme that allowed them to analyse the quality of interaction in an asynchronous discussion forum and

then proposed a framework that could ensure success. Their findings emerged from their study of an online discussion forum for a distance learning program.

The literature suggests a number of important points for the research. First, success is subjective. However, by looking at nature of the online community it is possible to determine criteria that would suggest if that community is successful or not.

2.5 SUMMARY AND IMPLICATIONS

Preece (2006) argues, if we understand the purpose of the community we wish to build then we can ensure that it is designed and managed in such a way to maximise the potential for success. While there is an extensive body of work investigating formal online learning environments there is less work looking at voluntary teacher communities that do not have a formal and compulsory learning focus. This research provided the opportunity to undertake a longitudinal case study of a voluntary teacher online community that spanned nearly a decade covering some pivotal moments in recent Scottish Educational history. The study was designed to contribute new insights into the body of work relating to voluntary teacher online communities. This literature review led to the formulation of the following research questions:

1. How can we develop a model to describe a voluntary online teacher community?
2. How can we explain the practices of a voluntary online teacher community?
3. What strategies can facilitate the development of voluntary online teacher communities?

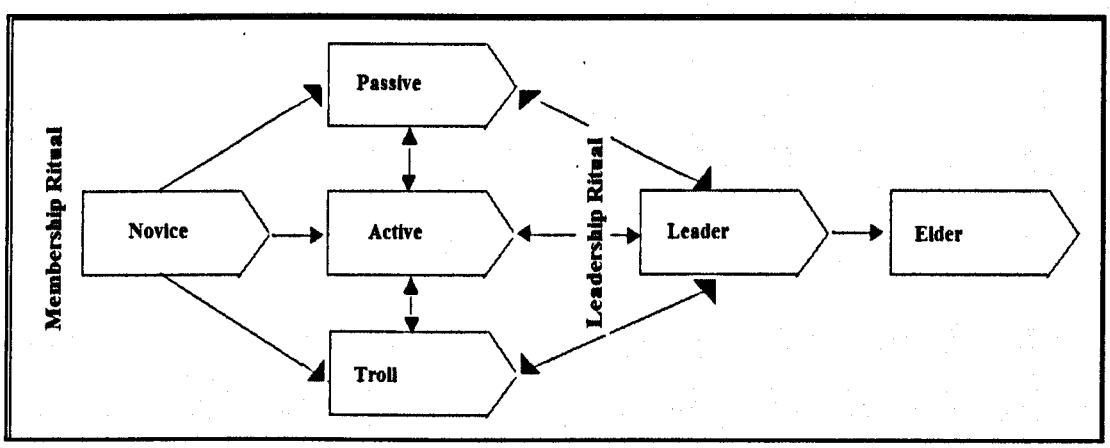
A conceptual framework to answer these questions was developed drawing on the literature presented earlier in this chapter, as summarised below. Reichel and Ramey argue that

> A conceptual framework is described as a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation
>
> (cited in Smyth, 2004, para 3)

Similarly, Miles and Huberman (1994) suggest the purpose of the conceptual framework is to identify research variables, and clarify the relationships between these variables. Building on the literature presented earlier in this chapter the following conceptual framework informed the main study methodology.

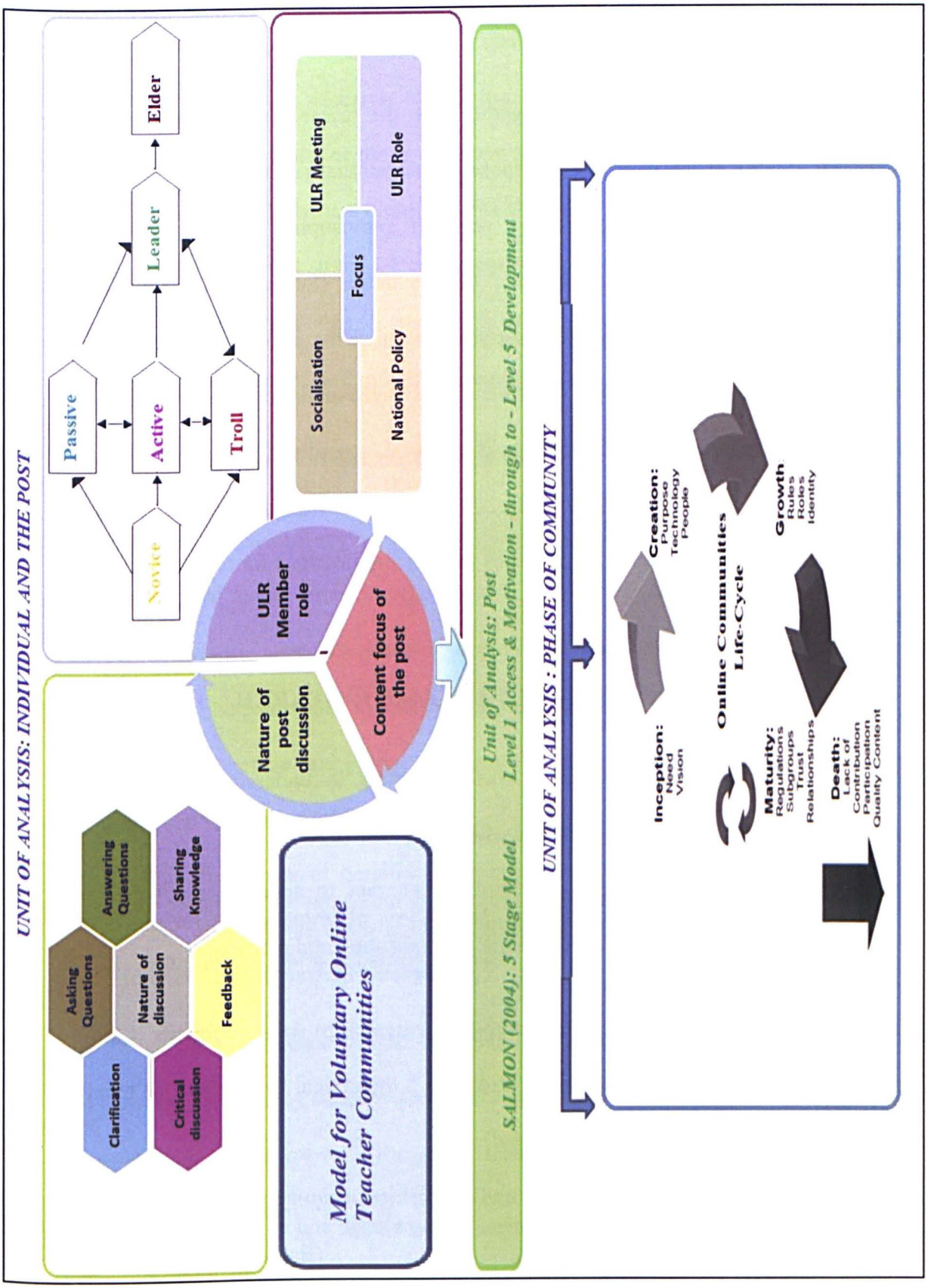
The framework sought to bring together theories of online member roles, purpose and nature of online discussions and community Life-Cycles. The first part of this framework focused on the changing role of the individual teacher in their online community. While Kim's (2000) model and Sonnenbichler's (2009) revised model clearly describe participant roles within standard open online community; uncertainty exists as to how they could be applied to a voluntary closed teacher community that operated both on and off-line. Neither Kim's (2000) nor Sonnenbichler's (2009) models provide a comprehensive framework to understand changing roles in such a community. However, they can be merged to form a unified model, which is more powerful than either of the original models on their own (Figure 2-8).

Figure 2-8. Unified member Life-cycle model for re-focused case study



The second phase of the framework was concerned with analysing the focus and nature of the discussions that occurred. Drawing on the work of Nandi *et al.* (2012) a content analysis of each post was undertaken. The content analysis of each post was then mapped on to Salmon's (2004) Five-stage model. Following identification of the nature of the interactions taking place it was then possible to identify the purpose of the community (Preece 2004). Finally, by looking holistically at the community Iriberri and Leroy's (2009) Life-cycle model was then applied to determine if the OC was in a phase of growth, maturity or death (Figure 2-9).

Figure 2-9. Conceptual framework for re-focused case study.



Chapter 3: Research Design

In this Chapter the literature is brought together with the research methodology. Section 3.1 begins by looking at the nature and purpose of educational research. This is followed by an exploration of the underpinning research philosophy, which outlines the epistemological and ontological positioning of the thesis (Section 3.2). Section 3.3 demonstrates how the underpinning philosophies informed the approaches and methods adopted in the initial survey. Section 3.4 outlines the changes made following the change in focus of the research. Section 3.5 presents the ethical considerations and professional conflicts negotiated throughout the study. Section 3.6 brings together the main methodological considerations and summarises the key implications for the data collection phase of the research.

3.1 NATURE AND PURPOSE OF EDUCATIONAL RESEARCH

Before undertaking research activities it was imperative to understand the nature of research itself. Anderson and Arsenault suggested that:

> Research in education is a disciplined attempt to address or solve problems through the collection and analysis of primary data for the purpose of description, explanation, generalisation and prediction.
> (Anderson and Arsenault, 1998, p.6)

While this definition communicated the purpose of research to solve problems it did not address the issue of research as an activity to create a theoretical foundation for practice. Bassey offered a slightly different perspective:

> Research is systematic, critical and self-critical enquiry which aims to contribute towards the advancement of knowledge and wisdom.
> (Bassey, 1999, p.38)

This duality of purpose was articulated by the ideas of Verma and Mallick (1999) who distinguished between research for the purpose of solving problems and research for the

purpose of developing theory. Although many researchers would argue that research can be both problem solving and theory developing. For example, Hammersley (2007) suggests there are two broad types of educational research, practical research that functions to solve problems and scientific research which functions to provide a more theoretical base. Drawing on the arguments of the researchers above the purpose of this research was both problem solving and theory building. Practical, in that it aimed to identify teacher perceptions of Glow and strategies that support the development of online communities of teachers, theoretical, in that it aimed to refine and extend existing models of the evolution/development of online teacher communities.

3.2 PHILOSOPHY UNDERPINNING THE THESIS

Terms such as 'epistemology' and 'ontology' can seem shrouded in mystery and annexed from the act of doing research (Grix, 2002). However, the philosophy underpinning research defines the approach adopted, constrains the questions that can be asked and the claims that can be made, and so had to be addressed at the outset if this research was to be meaningful. Mackenzie and Knipe encapsulated the importance that philosophy plays in research when they argued that:

> It is the choice of paradigm that sets down the intent, motivation and expectations for the research. Without nominating a paradigm as the first step, there is no basis for subsequent choices regarding methodology, methods, literature or research design
>
> (Mackenzie and Knipe, 2006, Para.6)

This raised the not inconsequential question of what does one mean by paradigm. Guba and Lincoln (1985, p.15) stated paradigms "*represent a distillation of what we think about the world (but cannot prove)*". Burgess, Sieminski and Arthur (2007, p.54) expanded on this argument to add that:

> a paradigm can be seen as a set of beliefs that deals with ultimates and first principles. A paradigm, it is argued, presents a world-view that defines for its holder the nature of the 'world', the individual's place in it, and the range of possible relationships in that world.

While these definitions provided a working definition of paradigm they did little to explain the link between ontology, epistemology and methodology. Denzin and Lincoln provided some clarity with the suggestion that:

> A paradigm encompasses four terms: ethics (axiology), epistemology, ontology, and methodology. Ethics asks "How will I be a moral person in the world?" Epistemology asks "How do I know the world?" . . . Ontology raises basic questions about the nature of reality and the nature of the human being in the world. Methodology focuses on the best means for gaining knowledge about the world.
>
> (Denzin and Lincoln, 2011, p.91)

Hitchcock and Hughes (1995, p.21) brought further understanding with the explanation that "*ontological assumptions give rise to epistemological assumptions; these, in turn, give rise to methodological considerations; and these, in turn, give rise to instrumentation and data collection*". Taylor and Edgar took this one stage further by explaining how ontology and epistemology influenced methodology:

> Simply put, the belief about the nature of the world (ontology) adopted by an inquirer will influence their beliefs as to the nature of knowledge in that world (epistemology) which in turn will influence the inquirer's beliefs as to how that knowledge can be uncovered (methodology)
>
> (Taylor and Edgar, 1999, p.27)

Hughes elucidated how choice of methods should logically follow on from one's ontological position "*every research tool or procedure is inextricably embedded in commitments to particular versions of the world (i.e. ontology) and to knowing that world (i.e. epistemology)*" (Taylor and Edgar, 1999, p.27-28). These ideas were neatly presented in a clear diagrammatic representation by Hay, which visualised the "*directional relationship*" of key methodological terms (Hay, 2002, p.63). Hay's work demonstrated how "*ontology logically precedes epistemology which logically precedes methodology*" (Hay, 2002, p.5). Underpinning all of this was the question of axiology and the ethics of research (Figure 3-1).

Figure 3-1. Theoretical underpinning for re-focused case study (adapted Hay, 2002, p.64).

1.Ontology	2.Epistemology	3.Methodology	4.Methods	5.Sources
Nature of social reality: Subjectivism (what we believe constitutes social reality)	How do we know this reality: Interpretivism (respects differences reality socially constructed).	**Phase 1:** Survey **Phase 2:** Case Study	**Phase 1:** Questionnaire **Phase 2:** Participant observations Semi-structured Interviews Documentation	**Phase 1:** Teachers across Scotland. **Phase 2:** EIS ULRs.
Axiology: How can we be a moral person in the world				

Grix (2002) argued, setting out the ontological position of a thesis enabled the researcher to unambiguously set out what they thought could be investigated. A statement of the ontological position makes it clear to the reader the boundaries of the thesis. Without bounding a thesis in this way the argument would become loose and open to attack. Blaikie provided a particularly helpful definition of ontology:

> the concept [ontology] is used here in a more specific sense to refer to the claims and assumptions that are made about the nature of social reality, claims about what exists, what it looks like, what units make it up and how these units interact with each other. In short, ontological assumptions are concerned with what we believe constitutes social reality.
>
> (Blaikie, 2000, p. 8)

At its most simplistic ontology considers the nature of reality. Could the world be considered an objective reality where knowledge exists independently from any awareness one may have of it (associated with the positivist paradigm)? Or was it a subjective reality, which only exists and is created in the minds of the actors within it (associated with the Interpretivist paradigm)? In terms of this thesis, did the online groups exist independently of the participants who engage with them or were they socially created through the interactions and within the minds of the users? This research adopted the latter position.

This research was situated within the constructivism perspective, a positioning "*that asserts that social phenomena and their meanings are continually being accomplished by social actors*" (Grix, 2002, p.177), or to quote Mumford

> What was once called the objective world is a sort of Rorschach ink blot, into which each culture, each system of science and religion, each type of personality, reads a meaning only remotely derived from the shape and color of the blot itself
>
> (Mumford, 1951, Para.15).

The research was bounded within the '*verstehen*' approach advocated by the German Philospher Dilthey:

> humans were decidedly different than inanimate objects, the subject of study of the natural sciences, and as such, required a different method of scientific inquiry . . . Dilthey also argued that it was the purpose of the human sciences not necessarily to explain human behaviour, but to understand it.
>
> (Glass, 2005, p.2-3).

The online groups that provided the backdrop for this thesis were viewed as social arenas. The actors engaged, (or not), with these online arenas. Through this engagement they created their own interpretations about the technology and political factors that may have influenced their decision to adopt (or not). In essence their understanding of the online community was socially generated within the group. In order to gain an understanding of these multiple realities it was necessary to occupy the frame of reference of each actor in action as they created their own reality in this environment. This required knowledge of the socio-historical circumstances of how the community came about.

To achieve *verstehen* required the acceptance that for any given event there were multiple realities with "*as many constructions as there are persons engaged in them*" (Lincoln and Guba, 1985, p.77). It necessitated the adoption of a voluntarist view of individual actors as creators of their own environment as opposed to the deterministic view of individual actors as products of their environment (Putman, 1983, p.36). Though of course there was an

interaction between the actor and the environment (the environment, including their cultural context impacting on the actor's view of reality).

If ontology asked the question "*what is out there to know about*" then epistemology asks "*how can we know about it*" (Grix, 2002, p.175). Or put simplistically, how could one gain an insight into the many realities we believed to exist. Blaikie defined epistemology as

> the possible ways of gaining knowledge of social reality, whatever it is understood to be. In short, claims about how what is assumed to exist can be known.
>
> (Blaikie, 2000, p.8)

Earlier it was discussed how "*every research tool or procedure is inextricably embedded in commitments to particular versions of the world (i.e. ontology) and to knowing that world (i.e. epistemology)*" (Hughes, cited in Taylor and Edgar, 1999, p.27-28). By aligning this thesis with the ontological concept of constructivism it was a natural corollary that the work would align with the Interpretivist paradigm. Interpretivism suggested that by adopting a holistic - naturalistic approach one could gain insight and understanding into the human condition and experience by trying to understand the how and why of an event, (Burton and Bartlett, 2005).

This thesis began by looking at teacher beliefs and their perceptions of technology and Glow. This evolved into a focus on understanding how to support the development of effective online communities. From the outset an objectivist approach would not only have clashed with the researcher's ontological position but it would also not have allowed insights into the perspectives of the teachers themselves. A key requirement of the positivist researcher is to maintain an "*objective standpoint and keeps personal 'contamination' of the data collection process to a minimum*" (Burton and Bartlett, 2005, p.21). A positioning that interpretivists would argue is impossible (Burton and Bartlett, 2005), especially given the case study involved practitioner research.

Indeed, Marshall and Rossman (1980) suggest that a researcher adopting a positivist approach could destroy valuable insights by coding and standardizing data while imposing their world on the subjects. The interpretivist researcher would argue that only by understanding the context in which the behaviour occurred could they understand the framework within which the research subjects interpreted their thoughts, feelings, and actions (The Open University, 2007, p.105). Having established the theoretical underpinning to the thesis it was then necessary to consider the practical aspects of investigating the problem.

The terms methodology and methods can be often confused and are frequently used interchangeably, however, they are separate entities (Cohen, Manion and Morrison 2005). The term '*methodology*' refers to the research process and is influenced by the philosophy underpinning the research (Cohen *et al.*, 2005) while '*method*' specifically refers to the techniques and procedures utilised to gather information, for example surveys, participant observation (Cohen *et al.*, 2005). However, in line with Hay's "*directional relationship*" of key methodological terms (Hay, 2002, p.63) the *why* (methodology) had to be considered before the *how* (methods). The importance of methodology cannot be understated as it provided the link between epistemology and action.

> Methodology provides the theoretical perspective that links a research problem with a particular method or methods.
>
> (Hesse-Bieber, 2010, p.456)

When considering the methodology for the initial study it was necessary to investigate the perceptions of Scottish teachers towards Glow at that time. In Section 1.2 it was discussed how there was a wide polarity amongst teachers and their use and perceptions of Glow (Seith 2010; Richards 2008). Teachers were either knowledgeable practitioners or had little experience; this research wanted to canvass the views of a wide group of teachers in order

to explore to what extent this was accurate. Consequently a survey that was informed by Roth's nested mixed methods design approach (cited in Hesse-Biber, 2010, p.458) seemed appropriate: using open-ended questions nested into a primarily closed question survey.

While a survey may not seem the most natural method to have adopted for the interpretive paradigm it was not so much as an end in itself but the beginning of a process. The mixed-method survey provided a practical solution to the dilemma of how to canvass the views of a wide group of teachers within limited time constraints while trying to achieve a deeper picture than could be acquired from survey questions alone. This approach did limit the depth and richness of the data, but at this early stage the aim was to throw a wide net to catch a range of ideas and perspectives, which could then be explored in more detail by other means.

The initial survey was followed with an in-depth case study of the ULR online community. Case study was deemed the most suitable methodology as the focus of the thesis was to investigate a contemporary phenomenon where the behaviours of the participants could not be manipulated. In addition it was recognised that this methodology was suited to dealing with data from a vast array of sources including online participant observations, surveys and interviews (Yin, 1984).

Over the years a number of specific types of case study have been identified, each with a slightly different focus and application (Table 3-1).

Table 3-1. Types of case study

Type of Case Study			Description of Key Features
Stake (1980,1995)	Yin (1984)	Bassey (1999)	
Intrinsic	Descriptive		Begins with a descriptive theory. Used to illustrate a specific event.
Instrumental	Exploratory	Theory seeking	Often seen as a prelude to further studies. Identifies areas for investigation.
	Explanatory	Theory testing	Used to establish cause and effect.
Collective	Multiple		Group of cases investigated and compared.

A case study has been defined as "*an instance in action*" (Adelman *et al.*, cited in Cohen 2000, p.181) with the 'instance' being a "*bounded system*" (Cohen, 2000, p.181). The ULR online community was a closed group and could be considered to be a 'bounded system' that would make a suitable case to study. As one of the recognised strengths of the case study is that they "*can establish cause and effect*" (Cohen, 2000, p.181) this approach provided the opportunity to gain deeper insights into the nature of this community than could be achieved with a purely quantitative investigation. Consequently an explanatory case study approach was adopted to explain this social phenomenon (Yin, 1984).

Where the methodology was influenced by philosophy, research methods were free from ontological and epistemological assumptions but guided by the research questions and the data sources (Grix, 2002, p.180). Or as Hesse-Bieber succinctly encapsulated the argument

> the deployment of a qualitative methodology does not rule out the use of quantitative methods
>
> (Hesse-Bieber, 2010, p.456)

However, the important factor was that the methods chosen added value to the study aims and did not detract from them. Or as Burgess *et al.* neatly summarise

> This multiplicity is best understood as a strategy that adds rigour, breadth and depth to the overall research design.

(Burgess *et al.*, 2007, p.57)

A detailed discussion of the methods used for the initial study and case study are provided in Section 3.3 and 3.4 below.

3.3 INITIAL ONLINE SURVEY

The purpose of the research was to investigate teachers' perceptions and beliefs about the nature and purposes of ICT and Glow and how they were using it. This gave rise to the following initial research questions:

1. Are teachers' perception of the purpose of ICT and Glow in the curriculum related to their existing beliefs about the purpose and nature of education?
2. Are the types of computer use regularly utilised by teachers associated with their existing beliefs about the purpose and nature of education?
3. Is there is an association between teachers' beliefs about the purpose and nature of education and their understanding of their school's management vision for ICT and Glow?

When designing the survey it was important to consider the credibility of the instrument. As was discussed in Chapter 2 two key ideas underpinned the research questions and the design of the questions themselves.

First, Selwyn and Fitz's (2001) recommendations that for schools to successfully implement Glow changes would need to be made to the management, organisation and culture towards ICT. Related to this was Fullan's (1996) argument that to achieve large scale change teachers needed to look to the bottom as well as the top of any system and that change can be achieved through two key strategies: Networking and Reculturing / Restructuring. The second idea related to the importance of teachers' views impacting on their use of technologies (Chen and Chen 2009; Tondeur *et al.* 2009; Tondeur *et al.* 2008;

Tondeur *et al.* 2007; Woolley and Woolley 2004). The wording of the actual survey questions was influenced by the ideas and survey tools of a number of researchers as discussed below.

Identification of each teacher's educational belief profile was pivotal to the research as it linked to the idea of culture and reculturing discussed by Fullan (1996) and the changes necessary to implement Glow discussed by Selwyn and Fitz (2001). Woolley and Woolley (2004; 1999) developed and validated a 'Teacher Belief Survey' (TBS) in order to measure teacher beliefs in relation to constructivist and traditional teaching approaches. Variations of the TBS have been used by a number of researchers looking at ICT implementation in order to determine if there is a link between teacher beliefs and ICT use (e.g. Pierce and Ball, 2009; Neiderhauser and Stoddart, 2001). Building on this work Woolley and Woolley's (1999) TBS was incorporated into the survey in order to identify a profile for each respondent. Questions related to technology use were influenced by two studies from Tondeur *et al* (2007; 2009). The first study was their investigation into a typology of actual computer use in primary education (Tondeur *et al.* 2007). The second was their work looking at '*structural and cultural*' characteristics of primary schools (Tondeur *et al.* 2009). Combining the TBS with measures drawn from Tondeur *et al.* (2009; 2007) a teacher's belief profile was compared with their perceptions of technology. These academic influences gave rise the final research questions for the initial study:

1. Are teachers' perception of the purpose of ICT and Glow in the curriculum related to their existing beliefs about the purpose and nature of education (as evidenced by their profile from the Woolley and Woolley (1999) Teacher Belief Survey)?
2. Are the types of computer use (Tondeur *et al.* 2008) regularly utilised by teachers associated with their existing beliefs about the purpose and nature of education (as

evidence by their profile from the Woolley and Woolley (1999) Teacher Belief Survey)?

3. Is there is an association between teachers' beliefs about the purpose and nature of education (as evidenced by their profile from the Woolley and Woolley (1999) Teacher Belief Survey) and their understanding of their school's management vision for ICT and Glow?

The full questionnaire along with the related academic influences is presented in Appendices 1 and 2.

In order to canvass the views of a wide group of teachers within limited time constraints a mixed-method survey provided a practical solution. A snowballing approach was adopted to identify participants for the survey (Cohen *et al.* 2000). The survey acted as a recruiting tool, which enabled access to participants, who could in turn provide access to yet more participants in a chaining process (Cohen *et al.* 2000). The survey was open to teachers from all sectors: early years through to secondary teachers. Councils across Scotland were contacted and asked to distribute an electronic link to the online survey. In addition, groups interested in professional development such as the EIS Learning Representatives and teachers engaged in post-graduate study at teaching institutions were contacted directly.

While the advantages of using an online survey were ease of distribution to a geographically dispersed population it did have its limitations. A criticism of this technique is that it can be problematic to generalize the findings to the wider population as the sample obtained would not have been representative of the wider population (Cohen *et al.* 2000). Two difficulties were encountered when establishing a sample. First, as this was an online survey there was a bias towards responses from more digitally literate teachers, as those who were not confident in the use of ICT where less likely to access their emails or complete the survey. A second limitation of this technique was that of access to

participants. A number of Local Authorities refused permission to contact teachers via email. Consequently not all respondents had the opportunity to have their voices heard. These limitations reduced the potential pool of respondents and introduced a weakness into the method, which was acknowledged when interpreting the data. Table 3-2 provides an overview of the initial research.

Table 3-2. Initial research model

Initial research model – Survey (Year 1)
Identification of key themes Literature review and analysis of policy documentation
↓
Development of research questions Questions derived from the research literature
↓
Data Collection- Survey of teachers across Scotland Mixed
↓
Data Analysis of Survey Results Final analysis. Results presented to participants for checking, and linking to literature.

A detailed example of the data analysis process is outlined in Section 4.1.

3.4 REVISED CASE STUDY METHOD

Following the finding from the initial survey that teachers were making little use of Glow (irrespective of their beliefs) the focus of the research changed to look at teachers who were using online communication, to develop our understanding of how to foster such online teacher engagement (as explained more fully in Section 4.2). The following research questions evolved from this focus:

1. How can we develop a model to describe a voluntary online teacher community?
2. How can we explain the practices of a voluntary online teacher community?
3. What strategies can facilitate the development of voluntary online teacher communities?

A single-explanatory case study approach was adopted. Yin (1984) argues that an important component of the case study design is to explain why the cases selected have

been chosen and to make the research process transparent to the reader. Yin also recommended the use of a case study protocol. In line with this recommendation a protocol was designed and followed during the study (Appendix 3). A participant selection model was adopted to ensure the community studied was more likely to produce data that could address the research questions (Cohen *et al.*, 2000). Specifically, the critical case selected was the Educational Institute of Scotland's (EIS) Union Learning Representatives' (ULRs) use of online communications.

The EIS is the largest teaching Union in Scotland. They started the Union Learning program back in 2003 (EIS n.d a) as a response to the agreement reached following the McCrone Report (Scottish Government, 2001) and the 'New Labour' Employment Act. which gave statutory rights to ULRs (Great Britain Parliament, House of Commons, 2002). ULRs were created by the EIS to support the Continuing Professional Development (CPD) of their colleagues. The role encompassed many duties including liaison with their Local EIS association, Local Authority, Scottish Government, GTCS and CPD providers on matters related to the professional development of teachers and lecturers. ULRs did not hold a negotiation role associated with traditional trade union positions. They worked in an advisory capacity only. (EIS n.d a).

The EIS have ULRs across Scotland have communicated online since their inception (EIS n.d a). The rational for selecting participants from a single community with a history of online communication was that this would increase the likelihood that the data obtained would address the research questions. Additional contextual information is provided in Section 4.3.

The model was informed by McMahon's (2007) sequential explanatory mixed methods design model: interviews building and expanding on findings from an initial survey that

was itself informed by initial e-participant observations from the EIS ULR's discussion forum. The underpinning ideology being to continually add layers of colour and richness to the data acquired from the initial survey and e-participant observations. This was essential to arrive at *verstehen*. Table 3-3 below provides an outline of the research model.

Table 3-3. Revised research model

Revised research model – Case Study (Years Two and Three)
Key themes from Year 1 Survey Reflection of Year 1 Survey Findings. Literature review. Analysis of policy documentation
↓
Development of research questions Questions derived from the Year 1 Survey findings and Literature Review
↓
Case Study Stage 1 Data Collection- Survey of EIS and e-Participant observations Participant observation of two groups. Survey designed to investigate perceptions of the groups
↓
Case Study Stage 1 Interim Data Analysis of survey results and participant observations. Identification of key themes to explore in interviews
↓
Case Study Stage 2 Data Collection- Individual interviews.
↓
Case Study Stage 2 Interim Data Analysis- Identification of interim findings to feedback to participants for further investigation
↓
Case Study Stage 3 Data Collection Real time participant observations of the two new parallel online groups, and a questionnaire.
↓
Case Study Stage 3 Interim Data Analysis Participant observations Analysis of Stage 3 Data Collection.
↓
Case Study Stage 4 Data Collection. Participant observations of chosen online group. Final Interviews.
↓
Case Study Final Data Analysis. Final analysis. Findings communicated to participants for checking before linking back to the literature.

Participant observations of the online community covered the timescale from 2003-2013. As the case study started in 2010 but the forum started in 2003 Phase 1.0 observations were historical. Observations of Phase 2.0 through to Phase 4.0 were carried out in real time. The researcher was also an accredited ULR and familiar with the culture of the group then participant observations provided the opportunity to gain deeper insights. This

translated into the action of the researcher using the online forums in addition to researching them. During this period the ULR online community underwent many changes, which are summarised below (Table 3-4).

Table 3-4. Overview of key phases of development of the ULR online community

Phase	Dates	Online Context
0 Pre-online	2001-2003	Moves were underway at governmental level to establish the NGfLS
1.0 Original Forum	Nov 2003 – Nov 2009	EIS forum started
2.0 Glow Group	Nov 2009 – May 2011	Glow forum set up EIS forum still available unofficially ULRs discovered LTS has access to Glow forum. ULRs began a boycott of Glow forum.
3.0 Offline	June 2011 – Feb 2012	EIS forum locked Glow forum available but ULRs stopped using it. Email became the default method of communication.
4.0 New Forum	March 2012-Sept 2012	March 2012 to Sept 2012: Trial period during which both the EIS and Glow forums were officially available. Sept 2012: ULRs balloted via email and asked to choose their preferred platform. Glow forum closed. EIS forum re-established as the official online tool.
	March 2013-On-going	March 2013: First 'Live chat' sessions held. Future Developments to include holding 'Live chat' sessions with wider EIS community.

The starting point for the data collection and analysis involved participant observations of the Original Forum (Phase 1.0) and the Glow Group (Phase 2.0). Each post was selected as the unit of analysis (Garrison, Cleveland-Innes, Koole and Kappelman 2006; Naidu and Jarvela, 2006; Strijbos, Martens, Prins and Jochems, 2006). In order to address the question of how to describe what was happening in each phase of the EIS ULR community a directed content analysis (Hsieh and Shannon 2005; Cook and Ralston 2003) of each post was undertaken looking at the following three areas:

- Who was posting and what role did they hold within the community?
- What was the focus of each post?
- What was the nature of each post?

A coding list for the *focus* and *nature* of each post was used to ensure consistency (Appendix 4 and Section 4.4). The coding list for the *focus* of each post was drawn from

the participant observations themselves. The codes for the *nature* of each post were informed by the literature review (Chapter 2). Importantly this coding exercise was not a one-off process but one of continual development and review with amendments and additions as required. Questions and issues emerging from the participant observations were then explored in more detail through questionnaires (Appendix 5) and semi-structured interviews (Appendix 6). This was consistent with the Case Study Approach (Miles and Huberman, 1994). Section 4.4 provides a detailed example of the data analysis process.

Towards the end of Phase 2.0 ULRs discovered the group was not private. They stopped using Glow and moved offline (Phase 3.0). A serendipitous opportunity arose during the course of the research. The EIS decided that they were going to run the Glow Group and a New Forum simultaneous to observe which group (if any) ULR's gravitated towards (Phase 4.0). This provided additional opportunities for data collection and to investigate the extent to which the technology adopted impacted on the evolution of an online community. Towards the end of Phase 4.0 further interviews were undertaken (Appendix 7).

The final consideration for the data collection and analysis process for both the Year 1 Survey and case study was to ensure the validity of the findings. Hamersley argues that:

> An account is valid or true if it represents accurately those features of the phenomena that it is intended to describe, explain or theorise.
>
> (Hamersley, 1987, p.69)

However, concerns have been raised about the direct transfer of this concept over into the interpretivist paradigm (Simco and Warin, 1997). Golafshani (2003) argues that the term validity needs to be redefined if it is to be applied to the interpretivist paradigm. Guba and Lincoln (1985) argue for the concept of "trustworthiness", that the reader can believe the research. This concept consists of:

a) credibility (in preference to internal validity);
b) transferability (in preference to external validity/generalisability);
c) dependability (in preference to reliability);
d) confirmability (in preference to objectivity).

(Guba, cited in Shenton, 2004)

According to Huitt (1998) 'Internal validity' relates (a) to the rigor of the study: whether the means of measurement are accurate and measure what they are intended to measure and (b) the extent to which the researcher has considered alternative explanations for any causal relationships (Winter, 2000). For qualitative research internal validity is replaced by credibility (Golafshani, 2003). Research findings can be considered to be "credible" if they can be said to provide an accurate representation of the participants' original data (Lincoln and Guba, 1985, p.296). From an interpretivist viewpoint only the participants themselves can determine if the findings are credible. In line with this the findings were made available to the participants to comment on throughout the process.

'Generalizability', or 'external validity', can been defined as the extent to which research findings can be applied to the general population (Ryan and Bernard, 2000). In objectivist research generalizability (or external validity) is achieved through statistical evaluation of the data (The Open University, E891, 2007). However, some researchers argue that external validity is not a concept appropriate to the interpretivist paradigm and have put forward alternatives more in keeping with their philosophy. Bassey (1999) suggests that instead of generalizability qualitative researchers adopt a process of transferability.

Transferability is the concept that describes the extent to which qualitative research findings can be applied to an alternative scenario (Web Centre for Social Research Methods, n.d). However, it is the reader not researcher that applies this transfer (Bassey, 1999). Similar to this concept, Stake (1995) suggested instead of the generalization case studies adopt an alternative approach he termed "*naturalistic generalization*". This

approach was based on an intuitive, empirically-grounded generalization were the reader is invited to decide if the finding can be applied to their context. What can be drawn from this debate is that in order for the findings to be meaningful to the educational community then the reader needs to be able to draw conclusion from the findings. By providing a detailed description of the study context and assumptions then the findings could be applied to other groups, should that group decide it appropriate.

As has been stated this work is aligned with the interpretivist paradigm, what is important is that the experience is understood and documented, rather than that it can be repeated (Burton and Bartlett, 2005). The aim was to reach *verstehen*. Consequently the issue of reliability was inappropriate. Rather than focusing on whether the work could be repeated it was more important to ensure that a full understanding of the experiences of the participants and the process by which this understanding was achieved was transparent. Consistent with this approach the concept of dependability was adopted. Shenton argues that

> to address the dependability issue more directly, the processes within the study should be reported in detail, thereby enabling a future researcher to repeat the work, if not necessarily to gain the same results.
>
> (Shenton, 2004, p.71)

This reporting included making references to the research design and implementation, operational details and post-research reflection (Shenton 2004).

Guba and Lincoln (1985) discussed the concept of confirmability. Shenton suggests:

> steps must be taken to help ensure as far as possible that the work's findings are the result of the experiences and ideas of the informants, rather than the characteristics and preferences of the researcher
>
> (Shenton, 2004, p.71).

Miles and Huberman (1994) suggest that to meet the requirement of confirmability requires the researcher to honestly reflect on their own bias and predispositions and the

impact this may have on the research. Carcary (2009) argues confirmability can be achieved through the use of an audit trail. Such a trail involved an intellectual audit to record the developing thinking of the researcher and a physical audit to record methodological decisions taken (Appendix 8).

3.5 AXIOLOGICAL AND ETHICAL CONSIDERATIONS

> Educational researchers have a responsibility to ensure that in whatever research paradigm they work, the research that is conducted is done so within an 'ethic of respect' to those who participate... When research uses the Internet as the medium of investigation, these ethical responsibilities become more complex for the educational researcher.
>
> (James and Busher, 2007, p.101)

This research was designed within the framework of the BERA Ethical Guidelines for Educational Research (2011). The underlying principle being

> to enable educational researchers to weigh up all aspects of the process of conducting educational research within any given context (from student research projects to large-scale funded projects) and to reach an ethically acceptable position in which their actions are considered justifiable and sound
>
> (BERA, 2011, p.4)

In order to allow this thesis to be considered ethically acceptable the following principles of informed consent, an awareness of professional conflict, and if not anonymity then confidentiality were adhered to (Burgess *et al.*, 2007). Furthermore Mocker's (2014) arguments that to be an ethical practitioner researcher it is important to ensure the participants experience no harm, their voices are heard, consideration is given to power dynamics and sound judgment is exercised throughout the course of the research were also followed.

The first step in addressing the ethical considerations of the thesis was to obtain approval from The Open University Human participants and materials ethics committee (Appendix

9). This was not a tick-box exercise but one that supported the development of an ethical framework because as Burgess *et al.* argue "*conducting your research in an ethical manner is not simply a matter of adhering to a set of rules. It requires a great deal of thought at every stage of your thesis*" (2007 p.34). To ensure the research stood up to scrutiny each aspect of ethical principles were re-visited throughout the process as discussed below.

Obtaining informed consent was the starting point for engaging with the participants. The first stage was to obtain permission from the EIS Headquarters to approach the ULRs. The ULRs were then informed of the research proposal through face-to-face meetings and information sheets. Potential participants were given a consent form to complete if they wished to be involved in the research. Forms could be returned by post so the ULRs could decide in privacy if they wished to participate. The principal of informed consent being renegotiated at each stage of the research was pivotal to the thesis. A participant could remove themselves and their data from the study without providing a reason or fear of consequences. This was explained in the consent forms (Appendix 10). As new ULRs joined the community they were also apprised of the research and invited to take part. As the ULR community was relatively small and fairly static it was feasible to contact each member from the community's inception to the present to obtain informed consent.

Professional conflict was a more problematic dilemma. The researcher had been an active ULR since June 2005 and as such was a participant researcher. Adopting the qualitative philosophy of self-immersion within the subject matter was appropriate but required careful consideration of how researcher participation could alter events (Burton and Bartlett, 2005). This was not a problem when analysing historical data before the research began but it was imperative to acknowledge this duality laterally and be conscious of unethically influencing online participation.

An interpretivist approach acknowledges the problem of researcher participation and tries to avoid unintentionally influencing the research. This approach brings with it other ethical considerations, namely reconciling the role as a researcher with that of a participant (Burton and Bartlett, 2005). For participant researchers it is imperative to be clear about the duality of the role and where they are placed within the research through open and honest communication with the participants and self-reflection. This translated into the practice of only including data from official sources such as forum posting, interviews and questionnaires were there was a clear consent. Informal conversations were not included.

Closely aligned with this was the ethical dilemma of coercion. As the researcher was also a ULR it was possible that colleagues may have felt obligated to participate. This links to Mocker's (2014) discussion of power dynamics. It required the researcher to be conscious of the boundary between roles and conscious of not applying undue pressure or orchestrating events to meet the needs of the research as opposed to the ULRs.

Whilst professional conflict and coercion appeared to be the most problematic concerns, on paper protecting the anonymity of the participants should have been straightforward. At its most basic it means no individual is named in the research. The reality in the Scottish Context is more problematic as 'everyone knows everyone else'. Even without naming someone it could be possible for them to be unwittingly identified. To address this difficulty careful presentation of quotations used in the thesis was required. Not only would this help to ensure ULR voices were heard; it would also ensure no harm was done to participants. Furthermore, it was also necessary to explain to participants that whilst the data was anonymised no guarantees could be given that readers would not be able to identify individuals. This honesty ensured that consent given was truly informed with participants able to make a balanced judgment.

3.6 SUMMARY AND IMPLICATIONS

The research adopted the ontological position of subjectivism associated with the Interpretivist paradigm. Bounded within the *verstehen* approach the aim of the thesis was to achieve an understanding of the ULR community while acknowledging the limitations of this approach given there would be multiple socially constructed realities. In order to investigate these realities a survey was used for the initial study followed by a case study. As this thesis involved participant research special consideration was given to avoid professional conflict and coercion in addition to the usual ethical considerations of informed consent and anonymity.

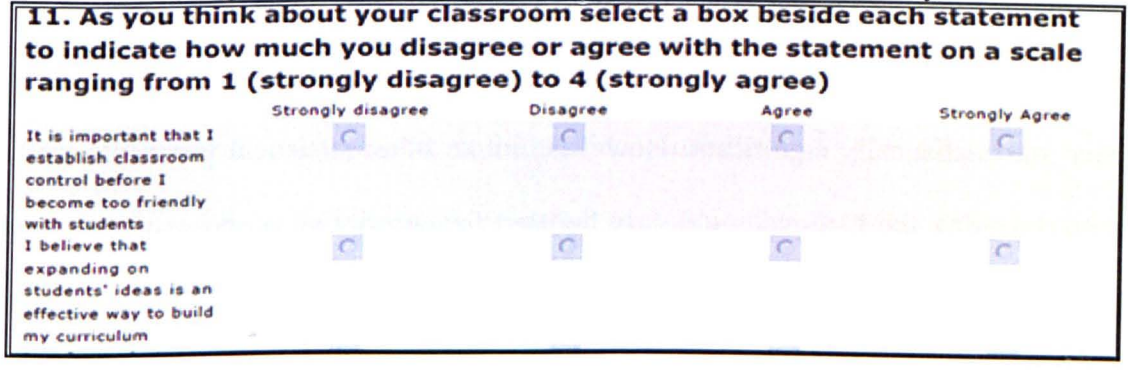
Chapter 4: Results

This chapter begins by presenting the data analysis from the Year 1 Survey (Section 4.1). This analysis indicated that teachers were not utilising Glow in their classrooms. This led to a refocusing of the research questions on the EIS ULR community as discussed in Section 4.2. This is followed by Section 4.3 which outlines the contextual background for the case study group. Section 4.4 explains the conceptual framework for analysing the EIS ULR community. Sections 4.5 – 4.23 presents the case study analysis.

4.1 INITIAL SURVEY INTO GLOW AND ICT USE

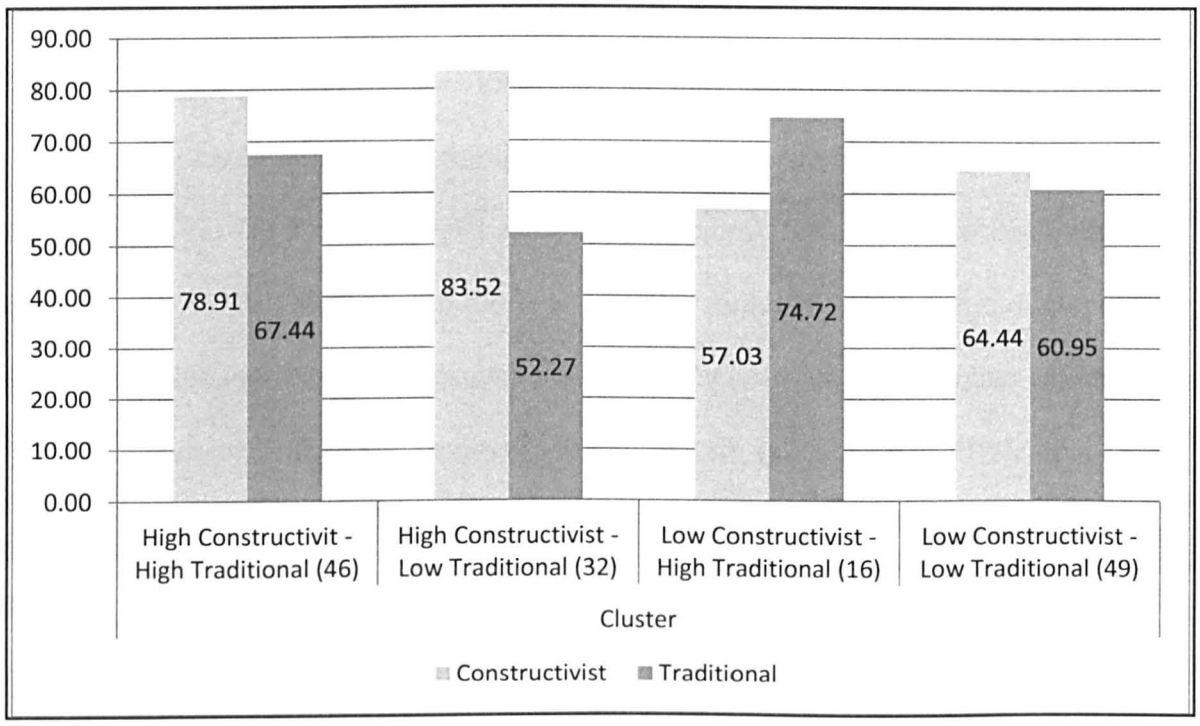
173 teachers responded to the Year 1 online survey. Of the 143 usable data sets 49 were from the primary sector, 86 were from the secondary sector, 7 were special needs sector and 1 was from early years. As the participants were not contacted directly but through third party sources (e.g. Local Authority Education Departments, CPD providers etc.) it was impossible to calculate a return rate as there was no available data on who actually received the email link to the survey. Of these 30 data sets were incomplete and excluded from the analysis. The first step in the analysis involved the identification of a teacher belief profile for each respondent. The survey utilised Woolley and Woolley's (2004) 'Teacher Belief Survey', to identify the underlying belief system of each teacher as being either constructivist or traditional. Figure 4-1 shows a screenshot of some of the questions.

Figure 4-1. Screenshot of section of teacher belief survey



A K-means cluster analysis was undertaken to identify four profile groups from the results of Woolley and Woolley's (1999) Teacher Belief Survey. In a K-means cluster analysis K is the number of desired clusters. In this research K=4, related to the different combinations of constructivist and traditional belief scores. Each teacher was assigned to a cluster that resulted in the smallest distance between the cluster mean and their score on the traditional and constructivist measure (Pallant, 2007). The research adopted the same procedure as Tondeur *et al.* (2008), sum scores were calculated for constructivist and traditional measures (0-100). These were then used to inform the profile of each cluster. Figure 4-2 shows the final cluster centres for each profile group (Appendix 11).

Figure 4-2. Final cluster centres for teacher belief profile groups

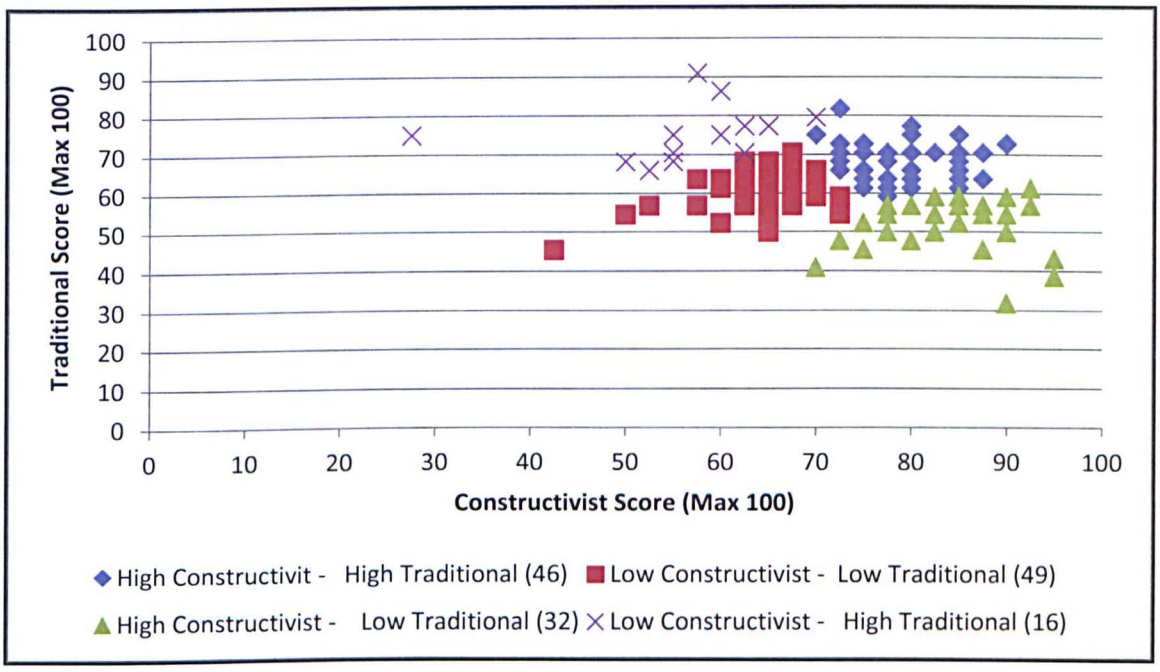


Following the identification of teacher responses into clusters the traditional approach would have been to undertake an ANOVA F-test to determine if the make-up of each cluster was statistically significant. However, unlike other statistical procedures, for K-means clustering the F tests should only be used for descriptive purposes as the clusters were chosen to maximise the differences between the beliefs profiles of the teachers in

each (Pallant, 2007). So while the F-test could not tell us if the clusters were statistically significantly different the results did indicate that the constructivist scores (108.27) had a greater impact on the cluster profile than the traditional score (69.41).

The scatter plot below (Figure 4-3) shows the relationship between constructivist and traditional scores for each of the respondents with the four clusters representing the four different groups.

Figure 4-3. Responses to Question A11: Teacher belief cluster groups.



From Figure 4-2 and Figure 4-3 the size and make-up of each cluster was fairly consistent with the exception of the low constructivist – high traditional cluster, which contained only 16 teachers. A Chi-square test for association was conducted between constructivist and traditional profiles to determine the probability that this distribution occurred by chance. All expected cell frequencies were greater than five. There was a statistically significant association between constructivist and traditional profiles, $\chi^2(1) = 17.043$, $p = .000$ (Appendix 12). When the test was repeated excluding the outlying category of low constructivist – high traditional then there was still a statistically significant association between constructivist and traditional profiles, $\chi^2(1) = 45.308$, $p = .000$ (Appendix 13).

Having identified a belief profile for each teacher in the survey (dependent variable) these were compared with the independent variables that formed the survey questions. Teachers were asked to self-report their perception of the impact that ICT had had on their professional context; available responses being positive, negative or zero impact. Figure 4-4 shows a screenshot of the survey question.

Figure 4-4. Screenshot of Question B1, Impact of ICT on professional context.

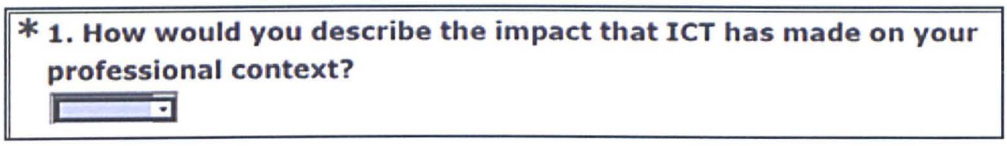
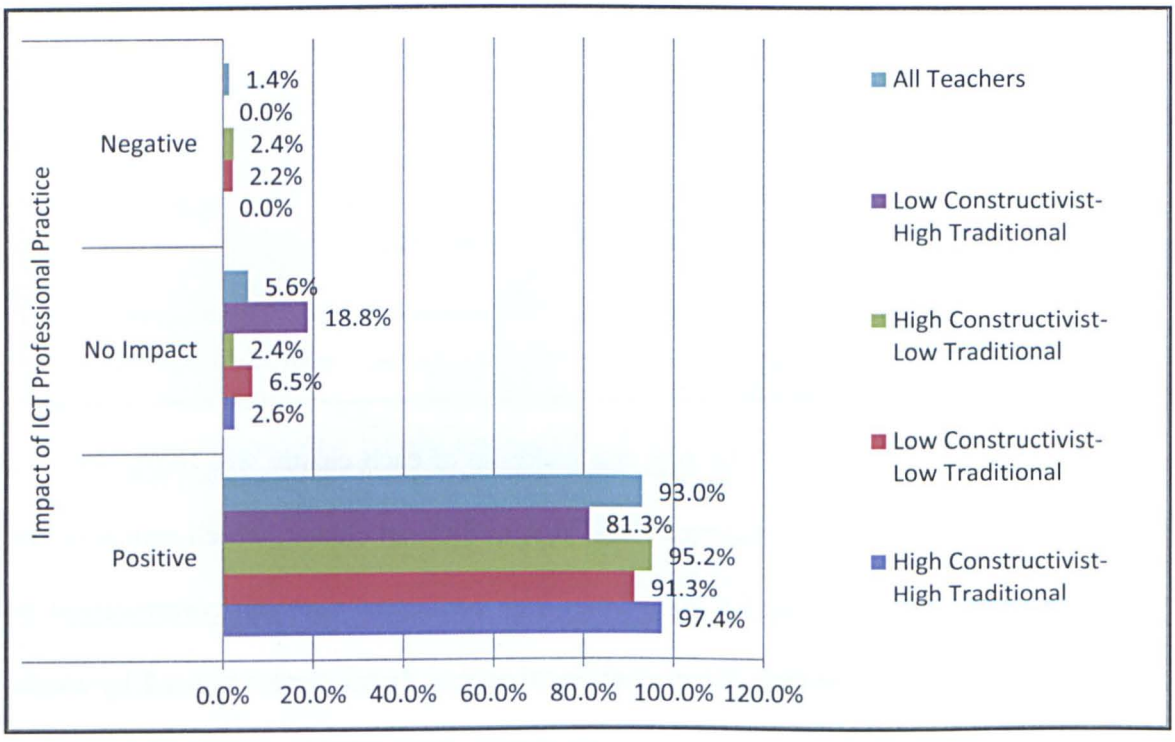


Figure 4-5 shows the relationships between teacher's beliefs and their perceptions of the impact of ICT on their professional context.

Figure 4-5. Responses to Question B1, Impact of ICT on professional context.

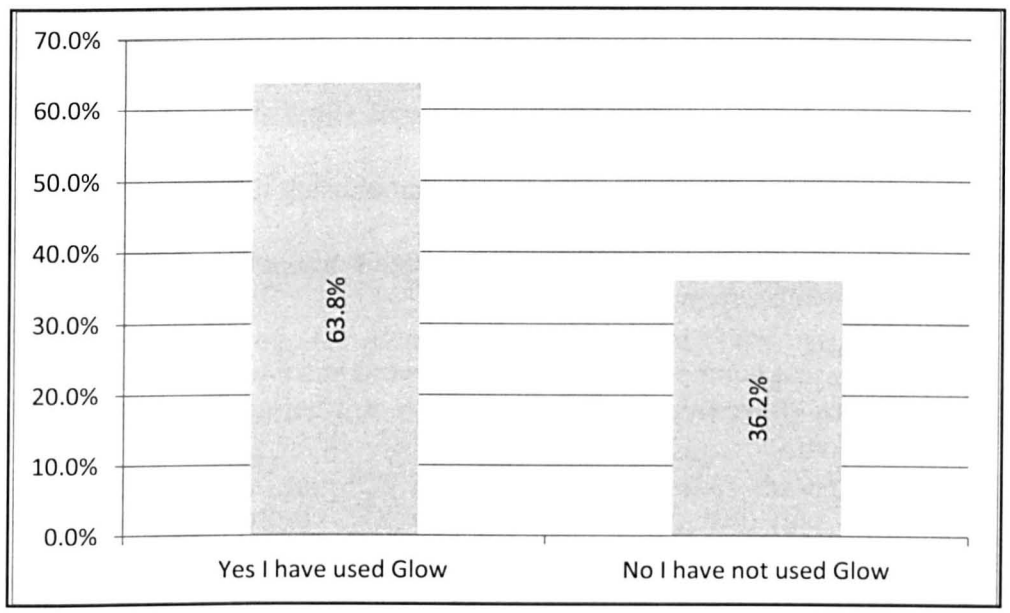


A Kruskal-Wallis test was performed to determine if there were differences in impact of ICT on professional context between belief profile clusters. The median score for 'Impact of ICT on professional context' was the same for all the groups at 3.0. This equated to positive impact. The findings were not statistically significant, $\chi 2(3) = 5.01$, $p = 0.172$

(Appendix 14). This indicated all teachers perceived ICT had a positive impact on their professional context regardless of belief profile.

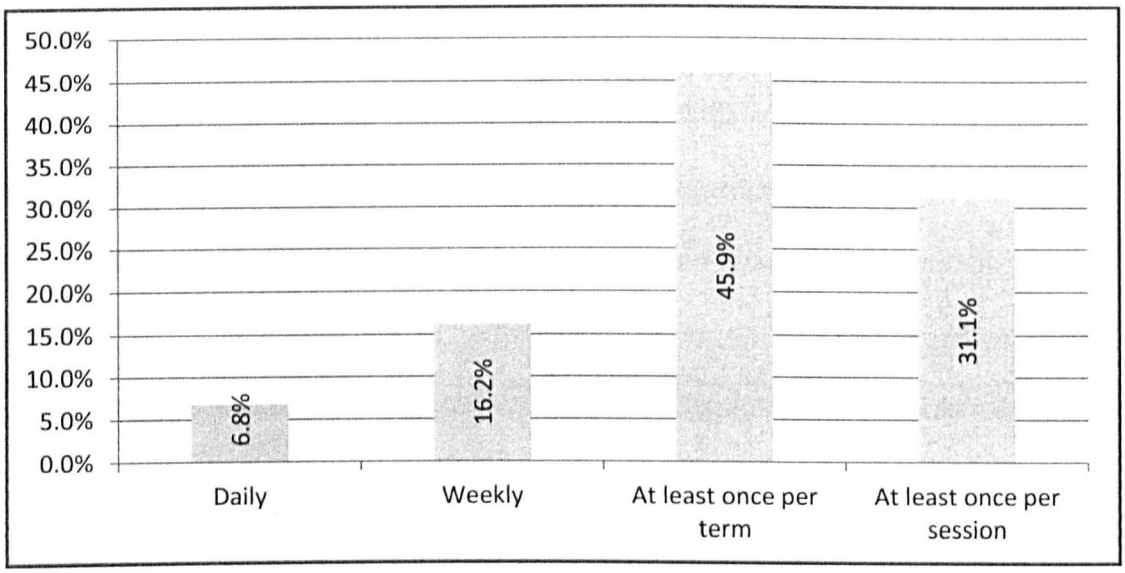
Similar analyses for the other independent variables showed a similar lack of significance. This indicated that for these respondents investigating teacher beliefs would not elicit useful information. The next step was to investigate teacher's reported use of Glow. Of the 143 teachers who completed the survey 116 (81.1%) said that Glow was available for use in their place of work. Closer questioning elicited that only 74 teachers (63.8%) for whom Glow was available had used it (Figure 4-6).

Figure 4-6. Responses to Question A5: Have you used Glow (n=116)



Following this finding the analysis aimed to find out to what extent these teachers were using Glow; specifically aiming to establish whether this usage was a one off event or regular usage. The 63.8% who had used Glow were questioned regarding the frequency of use (Figure 4-7).

Figure 4-7. Responses to Question A8: Please estimate how often you use ICT to achieve the listed personal / professional objectives: Access Glow (n=116)?



Although 6.8% of teachers reported daily use of ICT; in the 64 open-ended comments not one teacher made reference to making regular use of Glow. While the comments were broadly positive towards Glow it appeared they were not using it within the classroom.

> I have not had the glow training yet so therefore do not use it personally or within my classroom yet
>
> I have only just got my username and password and haven't really started to use it yet. I need time to be able to look at it before I could use it in the classroom.
>
> GLOW is only just being introduced to ICT co-ordinators in [local authority] and has not yet been used in schools, therefore it has had no impact as yet on staff and class teaching.
>
> (Survey respondents)

These findings raised a number of concerns for the future direction of the research.

The purpose of the initial study had been to investigate teacher's perception of the purpose of ICT and Glow in the curriculum and to see if this was related to their existing beliefs about the purpose and nature of education as evidenced by their profile from Woolley *et al.'s* Teacher Belief Survey (2004). The majority of teachers reported that ICT had a positive impact regardless of their beliefs. Looking specifically at responses for Glow,

initial analysis suggests that not only did uncertainty exist amongst teachers as to its purpose but that most of the respondents were not making much use of it. This suggested that responses to the remaining questions were at best speculative. It was this lack of uptake of Glow that led to a change in the research focus.

4.2 REFOCUSING THE RESEARCH

Following analysis of the survey the decision was taken to shift the focus to investigate a teacher community that had a history of communicating online and were about to migrate this community to Glow. The reasons for this can be summarised as follows:

- The survey found no strong relationship between teachers' pedagogical beliefs and their use of ICT. This may be explained by the fact that while each teacher groups was significantly different they all clustered around the middle of the scales. Therefore they were more alike than first appeared. Therefore, refocusing to look at level of use rather than relationship between pedagogical beliefs and views on ICT/Glow seemed a logical extrapolation.
- However, the survey also found very low levels of Glow usage in the classroom. Therefore, the research shifted focus to look at a new group of teachers who were already engaged in using ICT for professional purposes, through an existing online community. This group was the EIS ULR community.
- By describing and explaining the evolution of how the EIS ULR community had developed online the re-focused research set out to derive a model to help inform the development of future voluntary online teacher communities.

As explained in Chapter 3, a case study methodology was adopted to explore the EIS ULR community. The revised research questions were:

1. How can we develop a model to describe a voluntary online teacher community?
2. How can we explain the practices of a voluntary online teacher community?

3. What strategies can facilitate the development of voluntary online teacher communities?

The remainder of this chapter focuses on answering research question 1. It provides a contextual overview of the EIS ULRs before going on to set out an example of the data analysis method utilised. Chapter 5 focuses on answering research questions 2 and 3.

4.3 CONTEXTUAL BACKGROUND

From an interpretivist perspective one cannot attempt to describe, yet alone understand any social context without knowing as much as possible about it. Thus the background to the development of the EIS ULR community was critical to this analysis and is presented below.

In June 2003 the first cohort of 27 teachers completed an online post-graduate course with University of the West of Scotland (UWS) to become accredited ULRs. Part of the course involved participation in online discussion forums (Alexandrou, 2007). In November 2003 they held the first offline meeting as accredited ULRs. At this meeting it was agreed that three face-to-face meetings would be held each academic year in November, February and May. The purpose of these meetings was twofold. First, they would allow for ULRs to broaden their skills and knowledge base through the use of guest speakers. Second, it would allow the ULRs to network. As ULRs were geographically dispersed across Scotland, alongside the establishment of the face-to-face meetings an online forum was established. Every newly accredited ULR was automatically given access to the online forum. However, online participation was voluntary. There were no mandatory requirements to go online. The purpose of the forum was to complement face-to-face meetings and provide each ULR with support and information to develop their role should they feel it was required.

The population of the case study fluctuated during the research. Some ULRs who were initially involved with the research left and new ULRs joined. All of the 22 ULRs who completed the online questionnaire in 2011 had experienced the Phase 1.0 and Phase 2.0 forums. The Novices ULRs seen in Phase 4.0 had not experienced earlier phases. In January 2014 there were 46 accredited ULRs across 16 Further Education Colleges and 21 of Scotland's 32 Local Authorities.

This case study investigated the following themes:

- The role of the forum in the evolution of the online teacher community.
- The best way to describe and explain the online teacher community.
- Guidance for the creation and development of other teacher online communities.

Table 3-4, which is reproduced below as Table 4-1, provides an overview of key development phases for the ULR community.

Table 4-1. Overview of key development phases for the ULR online community

Phase	Dates	Online Context
0 Pre-online	2001-2003	Moves were underway at governmental level to establish the NGfLS
1.0 Original Forum	Nov 2003 – Nov 2009	EIS forum started
2.0 Glow Group	Nov 2009 – May 2011	Glow forum set up EIS forum still available unofficially ULRs discovered LTS has access to Glow forum. ULRs boycott Glow forum.
3.0 Offline	June 2011 – Feb 2012	EIS forum locked Glow forum available but ULRs stopped using it. Email became the default method of communication.
4.0 New Forum	March 2012-Sept 2012	March 2012 to Sept 2012: Trial period during which both the EIS and Glow forums are officially available. Sept 2012: ULRs were balloted via email and asked to choose their preferred platform. Glow forum closed. EIS forum re-established as the official online tool.
	March 2013 – On-going	March 2013: 'Live chat' sessions held for first time Future Developments include holding 'Live chat' sessions with wider EIS community.

4.4 FRAMEWORK FOR ANALYSIS OF THE ONLINE COMMUNITY

The focus of the case study was to describe what happened in the ULR community with a view to being able to explain why it worked as well as it did.

The starting point for the case study was a quantitative analysis of the number of posts and threads in each phase of the ULR community. This was then followed by a qualitative analysis that investigated the roles adopted by ULRs and the *focus* and *nature* of the posts made. Online participant observations raised questions that were explored through online questionnaires and face to face and telephone semi-structured interviews.

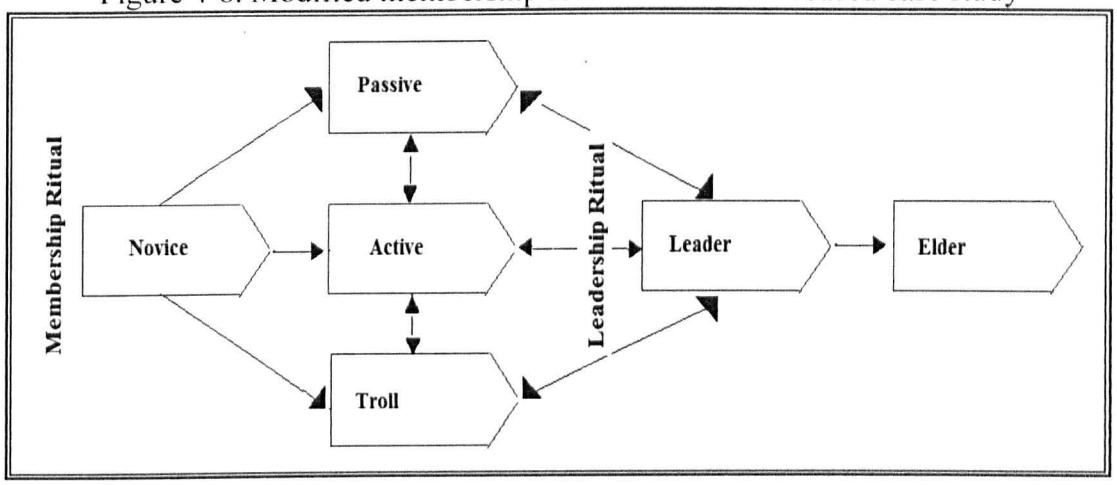
Each post was selected as the unit of analysis (Garrison *et al.*, 2006; Naidu and Jarvela, 2006; Strijbos *et al.*, 2006). To address the question of how to describe what was happening in each phase of the community a directed content analysis of each post was undertaken (Hsieh and Shannon, 2005; Cook and Ralston, 2003). The analysis investigated the following three areas:

- Who was posting and what role did they hold within the community?
- What was the *focus* of each post (linking to purpose of the group)?
- What was the *nature* of each post (linking to purpose of the group)?

Directed content analysis was selected as the most appropriate method in order to build on existing knowledge, and drew on theoretical models and coding lists as detailed below (Hsieh and Shannon, 2005). Thus, every post from the start of Phase 1.0 in 2003 to Phase 4.0 in 2013 was analysed in terms of the role of the poster, the content of the discussion, the nature of the discussion and how this mapped onto the conceptual framework presented in Section 2.7.

The first step involved the allocation of a role to each member of the community for each two-week timeframe for the duration of the research. As was outlined in Section 2.7 a modified membership role model was adopted (Figure 4-8):

Figure 4-8. Modified membership role model for re-focused case study



The following criteria were used to define the roles as shown below in Table 4-2.

Table 4-2. Membership role criteria for re-focused case study

Role	Criteria	Role Progression
Novice	New member.	Can move to passive / active or troll.
Passive	No messages within a two-week period.	Can move to active or troll.
Active	At least one message within a two-week period. Posts characterised by information seeking, with some information provision.	Can move to passive / troll or leader.
Troll	A member who seeks to disrupt the community. Characterised by periods of inactivity followed by 'spikes' in posting messages with disruptive content.	Within this private community 'troll' behaviour would result in expulsion.
Leader	Characterised by higher level of engagement, including initiating threads and taking a lead in responding to queries. May have an official role within the community.	Can move to elder or troll. (Troll would result in expulsion).
Elder	Established member of the community, who may post infrequently, but contributions tend to provide information and help maintain behavioural norms, expectations and historic knowledge.	Departure from the community. Can move to troll. (Troll would result in expulsion).

To apply the criteria above and determine role progression each member was analysed for evidence of:

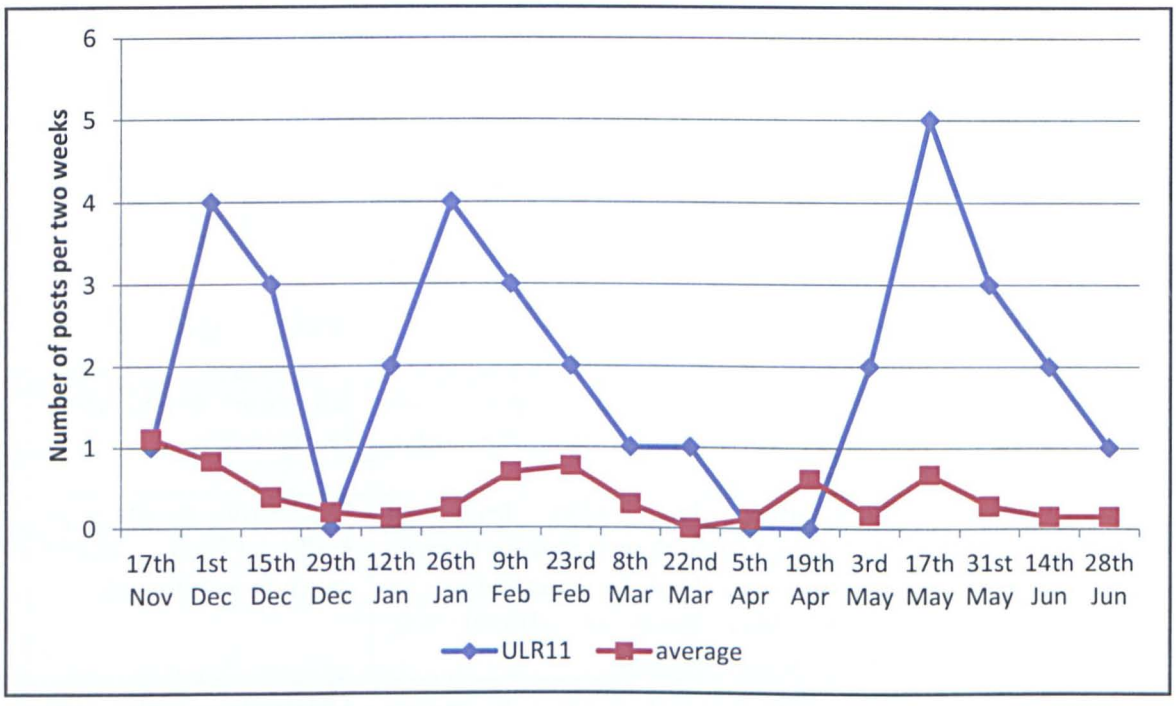
- Frequency and number of posts.

- Content of post indicating member role (for example, evidence of activities consistent with Leader role would include providing support to other members).
- Activities in the offline community.

To illustrate this process an example is given below detailing how a ULR11's community role was allocated and tracked over the course of the research.

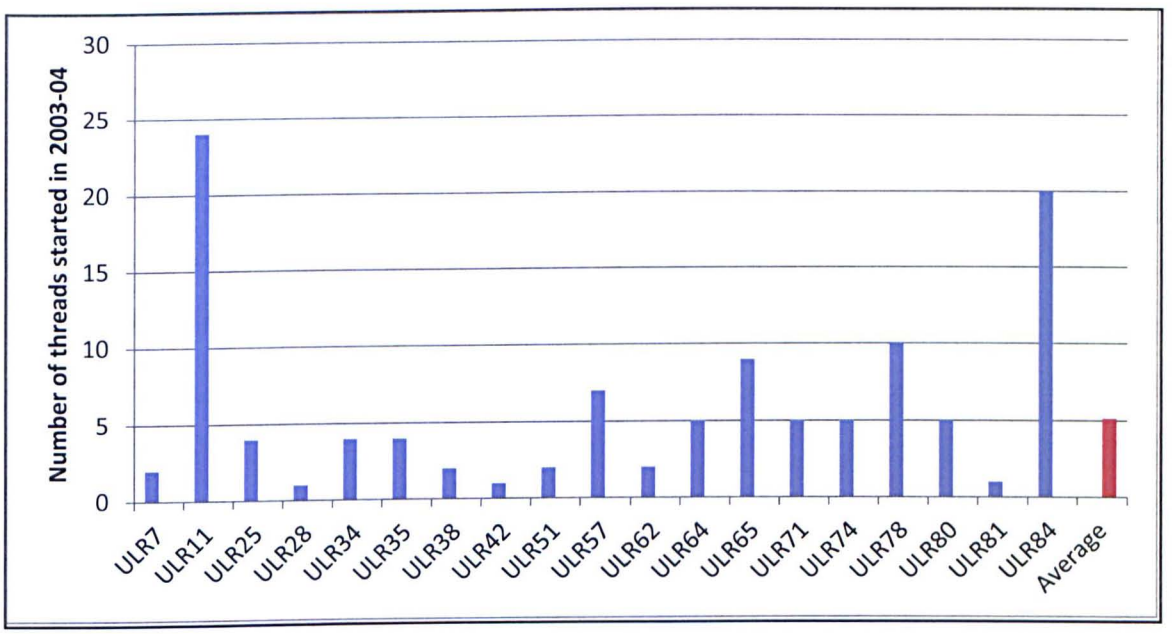
Analysis of the number of posts made during the first academic year of the forum demonstrated that ULR11 frequently made above the average number of posts (Figure 4-9).

Figure 4-9.Number of posts by ULR11 compared to average 2003-04



Additionally, ULR11 started the most threads in 2003-04, 24 out of the total 113 threads. This was 4 more than the EIS Moderator for the forum and was more than double the second most prolific ULR (Figure 4-10).

Figure 4-10. Number of threads started by members 2003-04



Numerically this was consistent with the higher level of activity indicative of a Leader. However, quantitative measures alone would not satisfy the criteria. Directed content analysis of the threads ULR11 initiated demonstrated further evidence of a Leader role in the online and offline community (Figure 4-11).

Figure 4-11. Development of ULR 11 as a community Leader Phase 1.0 (2003-2010)

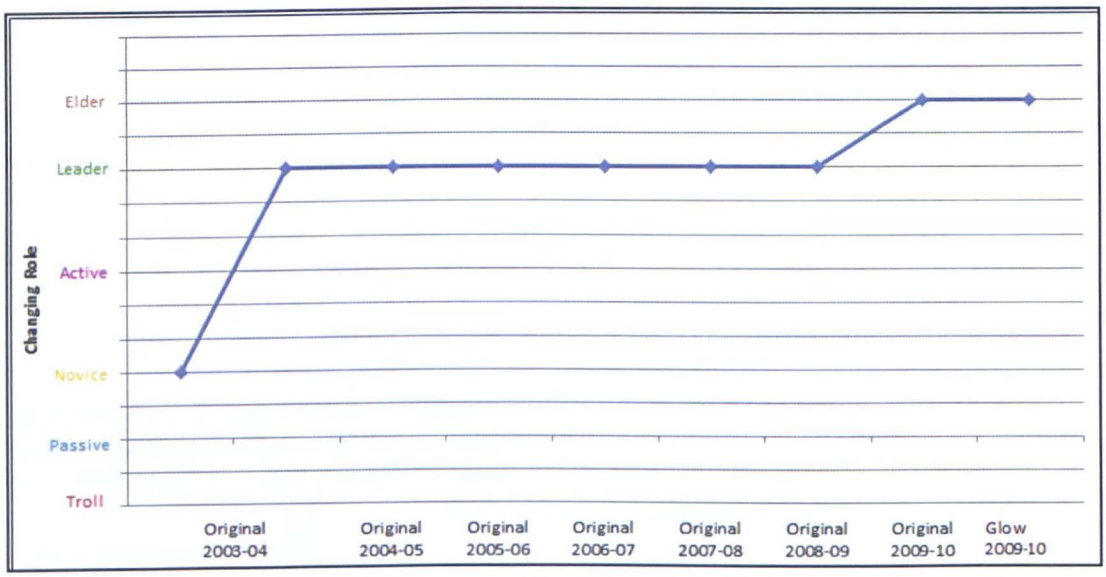
Topic	Author	Replies	Read	Last Post
Combined School and College / General Comments				
Next LR Working Group	*ULR 11*	2	63	**19/11/2008** 17:11:15 by:
LR Working Group-Chair's Report(brief) *ULR is the Chair*	*ULR 11*	6	99	**13/06/2008** 12:59:45 by:
HOT TOPIC- Coaching	*ULR 11*	0	27	**03/03/2008** 15:58:33 by: *ULR 11*
HOT TOPIC -- Local Authority LR Models	*ULR 11*	5	106	**16/02/2008** 19:42:23 by:
HOT TOPIC -LR Toolkit	*ULR 11*	1	50	**30/01/2008** 14:07:13 by:
HOT TOPIC - LRs and GLOW	*ULR 11*	11	110	**24/01/2008** 11:46:25 by:
Hot Topic 3 - Chartered Teacher	*ULR 11*	10	153	**18/01/2008** 10:25:14 by:

Interrogation of the content of posts indicated ULR11 was involved in developing the wider ULR role in the Union in its early stages. They chaired the CPD working group, developed Local Authority Models for taking forward the ULR initiative, advanced a

toolkit to support new ULRs and reported on Scottish Government national policies such as Chartered Teacher and Glow to stimulate discussions. This evidence suggested ULR11 was a Leader in both the online and offline community.

Towards the end of Phase 1.0 ULR11's level of posting decreased as they progressed to Elder status. They continued to post information to the community but not with the same frequency. Their posts were read and responded to by other ULRs. Figure 4-12 illustrates the changing role of ULR11 as they joined the community progressed to Leader and then Elder.

Figure 4-12. ULR11 changing community role Phase 1.0 (2003-2010)



The second step of the analytical framework involved coding the *focus* of every post in each phase of the community. Through a process of iterative coding a set of categories to code the *focus* of every post emerged from the messages. The primary codes are defined in Table 4-3 in bold along with any sub-codes.

Table 4-3. Codes for *Focus* of each post

Categories of Primary Code and Sub-codes	Description
Socialisation	**Social discussion not directly related to ULR role or work**
Novice post	First posting
Welcome	Discussion welcoming new ULRs to the community
ULR meetings	**Related to a Face-to-face ULR meeting**
Meeting organisation	Administration of attendance at face-to-face ULR meeting
Meeting socialisation	Social discussion following a face-to-face ULR meeting
Meeting discussions	Discussions looking at issues raised during a face-to-face ULR meeting
ULR role	**Discussions setting out the parameters of the role. What ULRs should do, who they should be in contact with. Facility time allocated to perform ULR role. ULR evaluation, ULR recruitment**
CPD Event	Event for teachers organised by ULRs in partnership with Local Authorities
Use of forum	Discussions relating to how ULRs should use forum
Members	How to make and sustain contacts with EIS members
Knowledge base	Knowledge of CPD providers etc. required to carry out role
Resources	Resources created to support ULRs in their role
National Policy	**Discussion of national policies**
Chartered Teacher	Discussions about Chartered Teachers
Glow	Discussions about Glow (other than those related specifically to the ULR Forum)

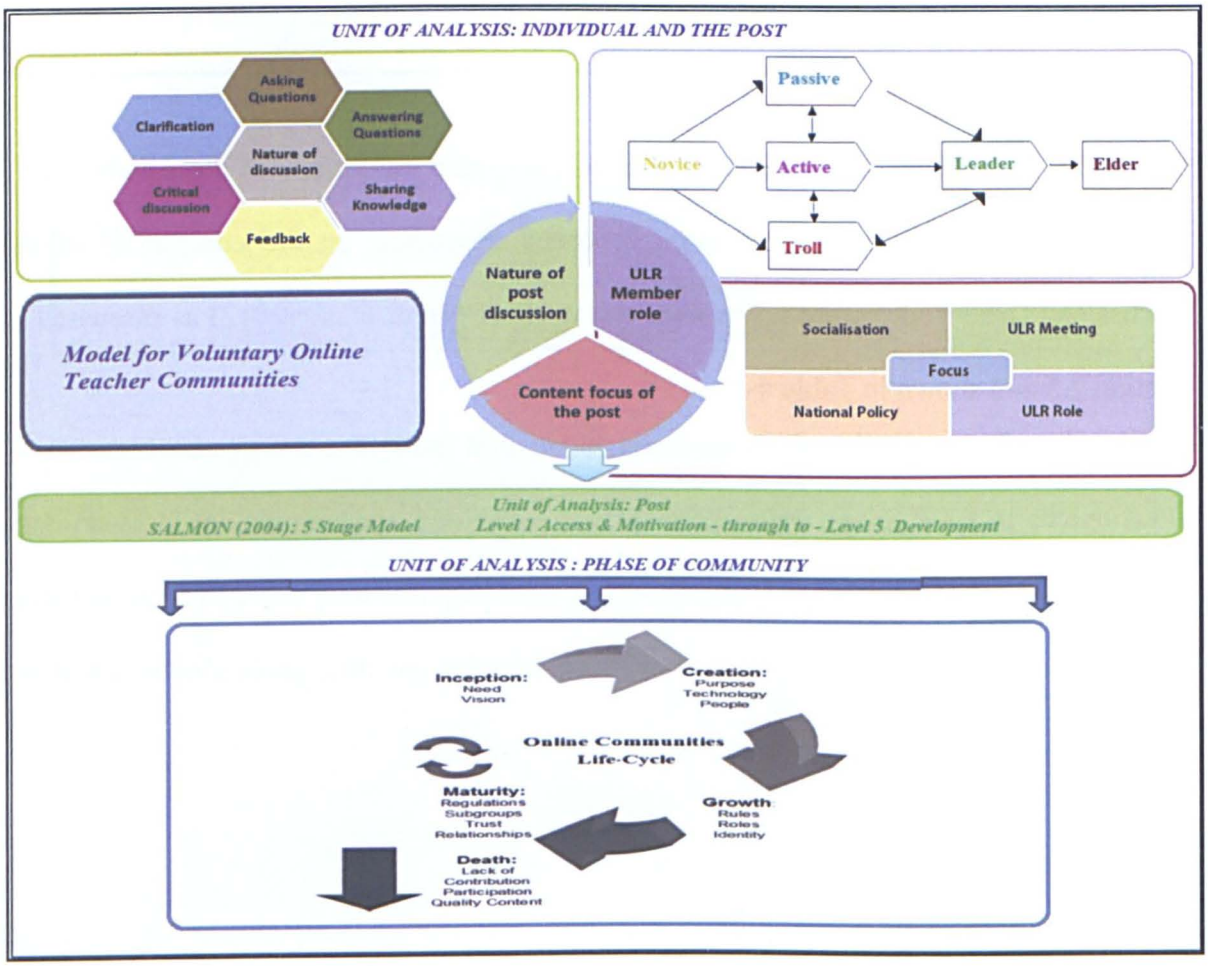
Step three then involved coding each post, to categorise the *nature* of discussion taking place. Any one post could have multiple codes depending on the complexity of the discussion. These codes were taken from the work of Nandi *et al.* (2012) as discussed in Section 2.5 and shown in Table 4-4.

Table 4-4. Codes for *Nature* of discussion for each post

Category	Description
Asking Question	Administrative
	Questions drawn from real world example (own experience)
	Looking for resources
Answering Question	Straight and in detail
	With real world examples (from own experience)
	With tips
	With justification
Sharing experience and knowledge	Updating community on experiences and knowledge
Asking for feedback	Looking for verification on action undertaken
Providing feedback	Responding to a feedback request
Clarification	Explaining a post so the meaning is understood
Critical discussion of contribution	Agreement or disagreement with a post but crucially providing an explanation for the stance taken
Socialisation	Off topic discussion not related to focus of post

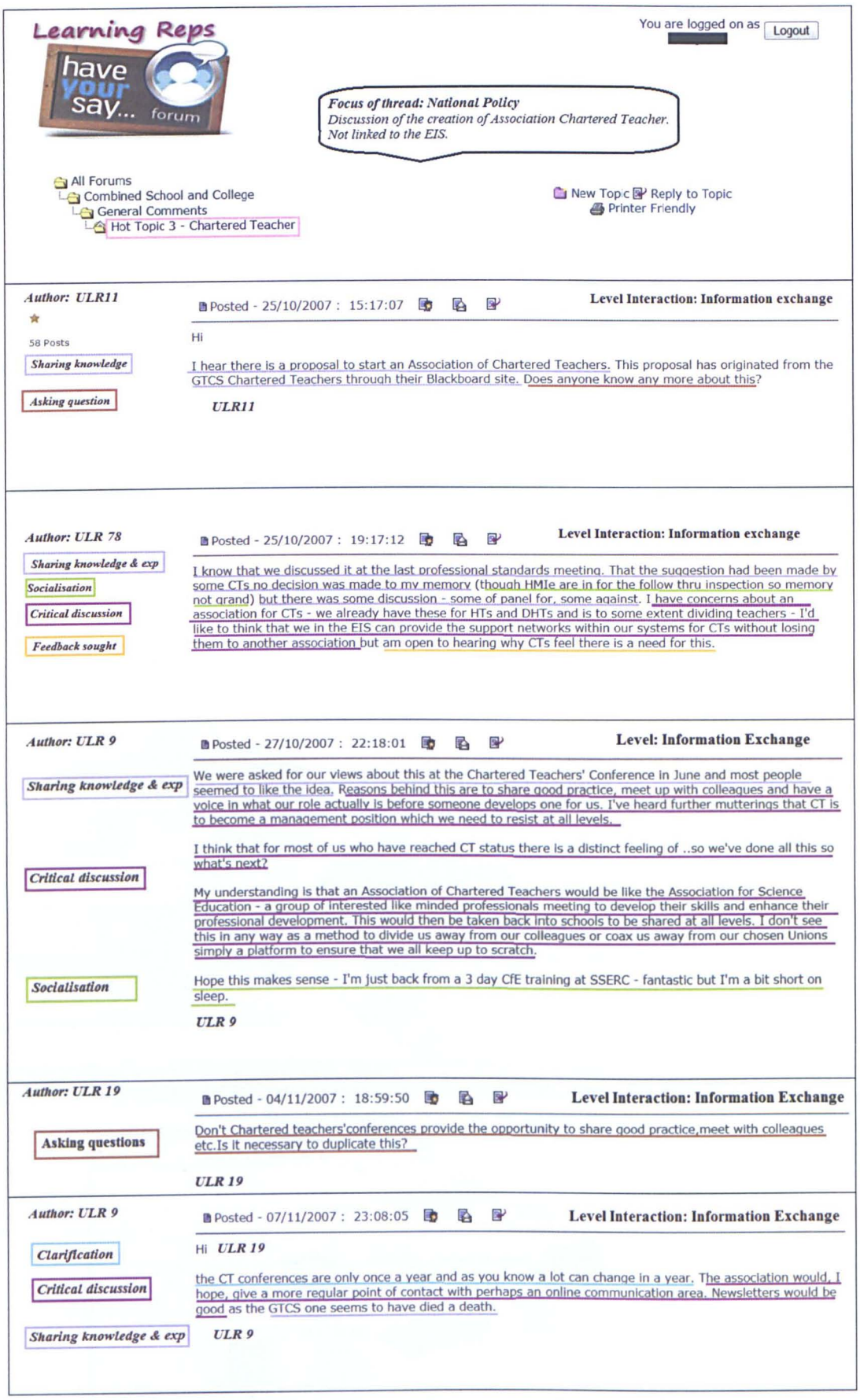
This analysis was followed by drawing these stages together into the conceptual framework presented in Section 2.7 and illustrated below (Figure 4-13).

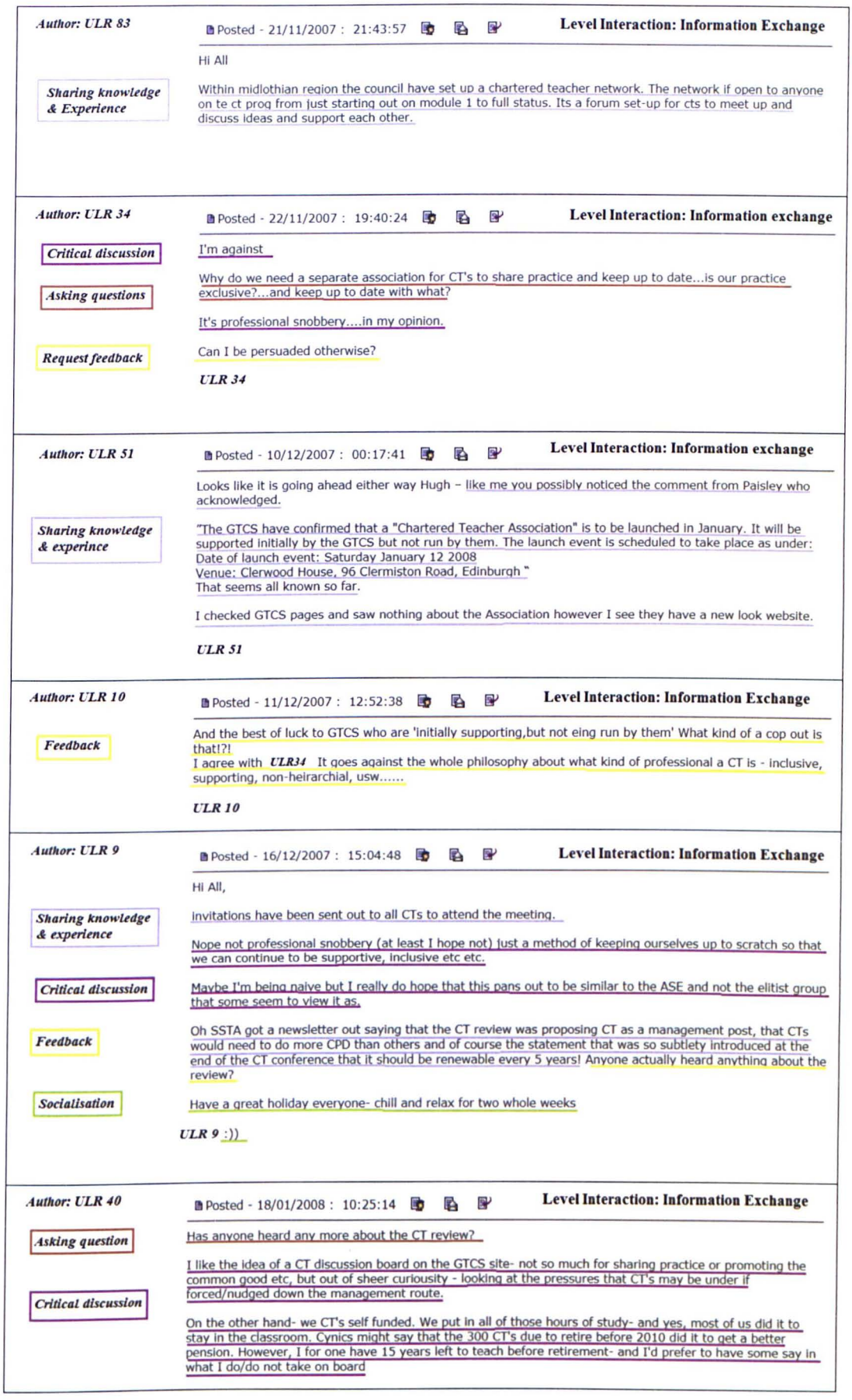
Figure 4-13. Conceptual framework for re-focused case study



To illustrate the coding process an example of how one thread was coded in terms of its *focus*, *nature* of the discussions and stage is provided in Table 4-5. The thread, ***"Principal / chartered teachers",*** was selected as a typical example of the content of the online discussions. It ran from the 25th October 2007 until the 18th January 2008 and consisted of 12 posts. It opened with ULR11 raising concerns about the proposal of a group of teachers to create a Chartered Teacher Association (ACTs).

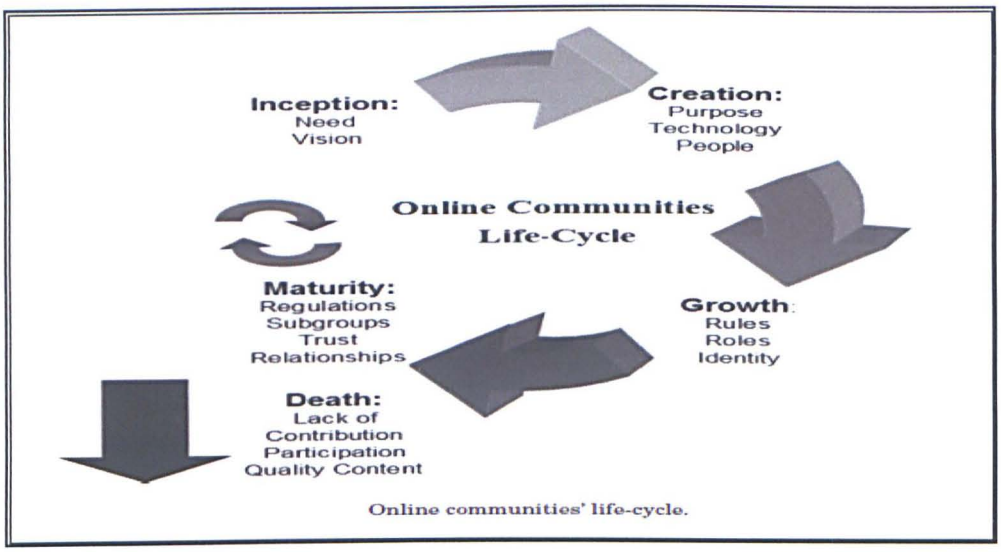
Table 4-5. Illustration of content analysis of a thread





The final analysis involved adopting a holistic approach with a view to determining the stage of the community lifecycle Iriberri and Leroy (2009) (Figure 4-14).

Figure 4-14. Information systems lifecycle framework (Iriberri and Leroy, 2009)

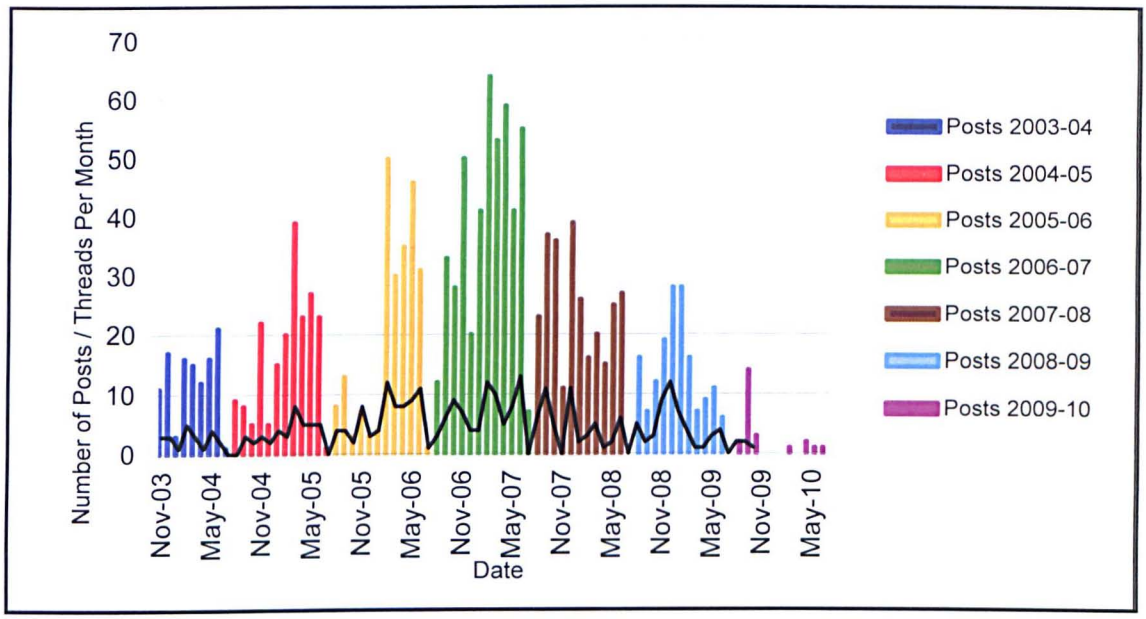


Having set out the conceptual framework, and illustrated how each post was coded, the next sections sets out the investigations of each phase of the community, providing a description of the online interactions, and an analysis of evidence from questionnaires and interviews.

4.5 PHASE 1.0 - ACTIVITY LEVELS

Phase 1.0 began in November 2003 when it was decided at the first national face-to-face meeting of ULRs to create a secure online forum to allow them to communicate with each other. Phase 1.0 officially ended in November 2009 when the group migrated to Phase 2.0 (Glow). However, participant observations indicated that Phase 1.0 was used unofficially as late as May 2010 (Figure 4-15).

Figure 4-15. Overview of Phase 1.0 forum threads and posts 2003-2010



A number of trends were observed. Activity levels for the forum in terms of numbers of threads and posts rose from academic year 2003-04 to a peak in the academic year 2006-07, before it dropped. The activity within the forum followed a cyclical pattern that coincided with the Scottish schools academic year (Mid-August to June). For the academic years 2004-05, 2005-06 and 2006-07 there appeared to be more activity in the second half of the academic year from February – July (Table 4-6).

Table 4-6. Activity levels by academic year Phase 1.0 2003-2010

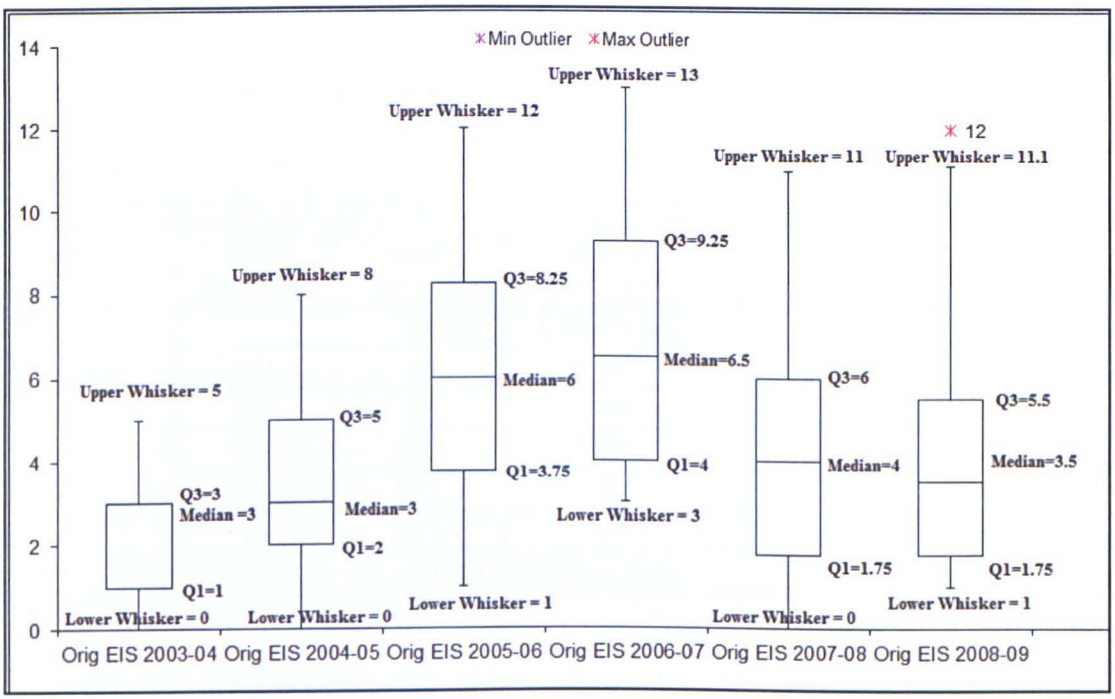
	Threads Aug-Jan	Threads Feb - Jul	Posts Aug-Jan	Posts Feb - Jul
2003-04	INCOMPLETE YEAR			
2004-05	14	26	64	133
2005-06	25	49	38	193
2006-07	33	48	184	279
2007-08	35	17	172	103
2008-09	38	15	110	51
2009-10	INCOMPLETE YEAR			

A paired-samples t-test was used to determine if the mean difference between the numbers of threads started in August to January compared to the number started in February to July was statistically significant. Prior to statistical analysis being undertaken the data was tested for the presence of outliers and normal distribution. No outliers were detected. The

assumption of normality was not violated, as assessed by Shapiro-Wilk test (p = .244). The ULRs did start more threads in Feb-Jul (31.00 ± 16.5 threads) as opposed to Aug-Jan (29.00 ± 9.7 threads). However, this difference was not statistically significant at the 0.05 level. The same process was performed for the number of posts. No outliers were detected. The assumption of normality was not violated, as assessed by Shapiro-Wilk test (p = 0.373). Once again the ULRs did make more posts in Feb-Jul than Aug-Jan. Feb-Jul (151.80 ± 87.7 posts) compared to (113.60 ± 64.3 posts) for Aug-Jan. However, this difference was also not statistically significant at the 0.05 level (Appendix 15).

A box plot analysis of threads and posts in each academic year was plotted to compare their distribution from one academic year to the next (Figure 4-15 and Figure 4-16). As the academic year 2009-10 only encompassed 3 official months this timeframe was excluded from the analysis.

Figure 4-16. Box plot analysis of Phase 1.0 forum threads (2003-2009)

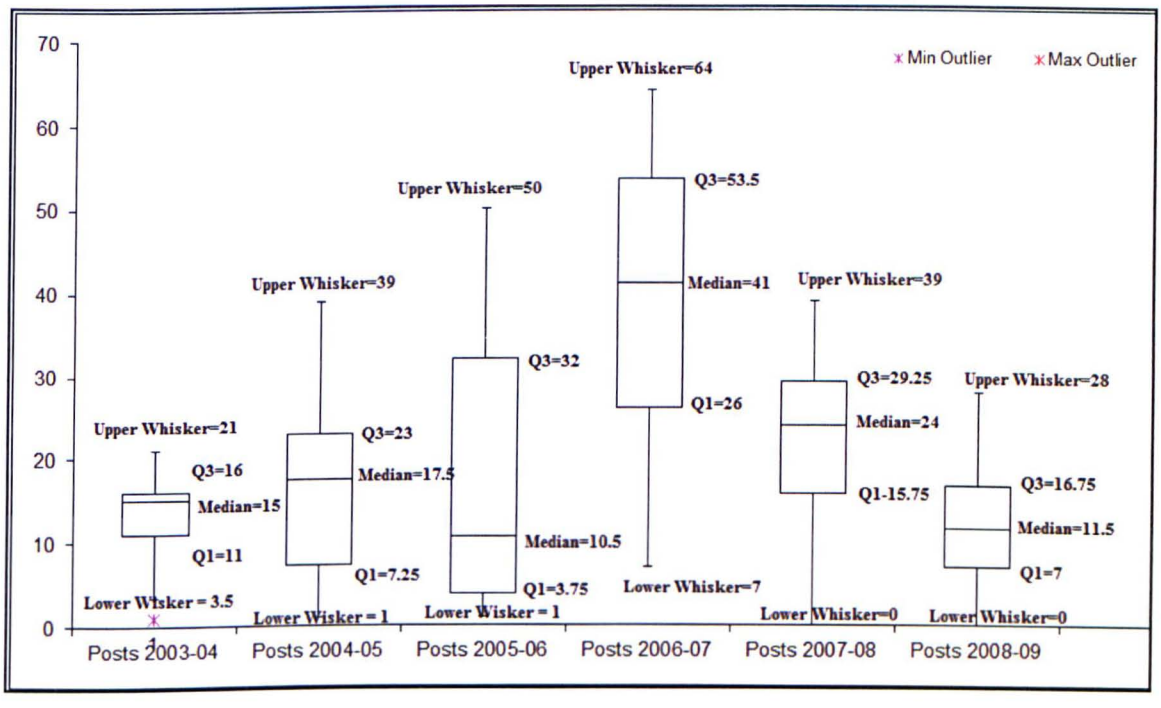


The range of threads started per month during an academic year increased from 2 in 2003-04 to a maximum of 5.25 in 2006-07 before decreasing to 3.75 in the final year 2008-09.

The median value for number of threads started per month during an academic year followed the same pattern as the range. The lower quartile figure (Q1) increased from 1 in 2003-04 to a peak of 4 in 2006-07 before decreasing to 1.75. The upper quartile figure (Q3) increased from 3 in 2003-04 to a peak of 9.25 in 2006-07 before decreasing to 5.5. All of this data supported the view that Phase 1.0 experienced a period of growth from its inception in 2003-04, which peaked in 2006-07 before it entered a period of decline from 2007 to 2009.

A similar trend was observed for the range of posts made per month during each academic year (Figure 4-17).

Figure 4-17. Box plot analysis of Phase 1.0 forum posts (2003-2009)



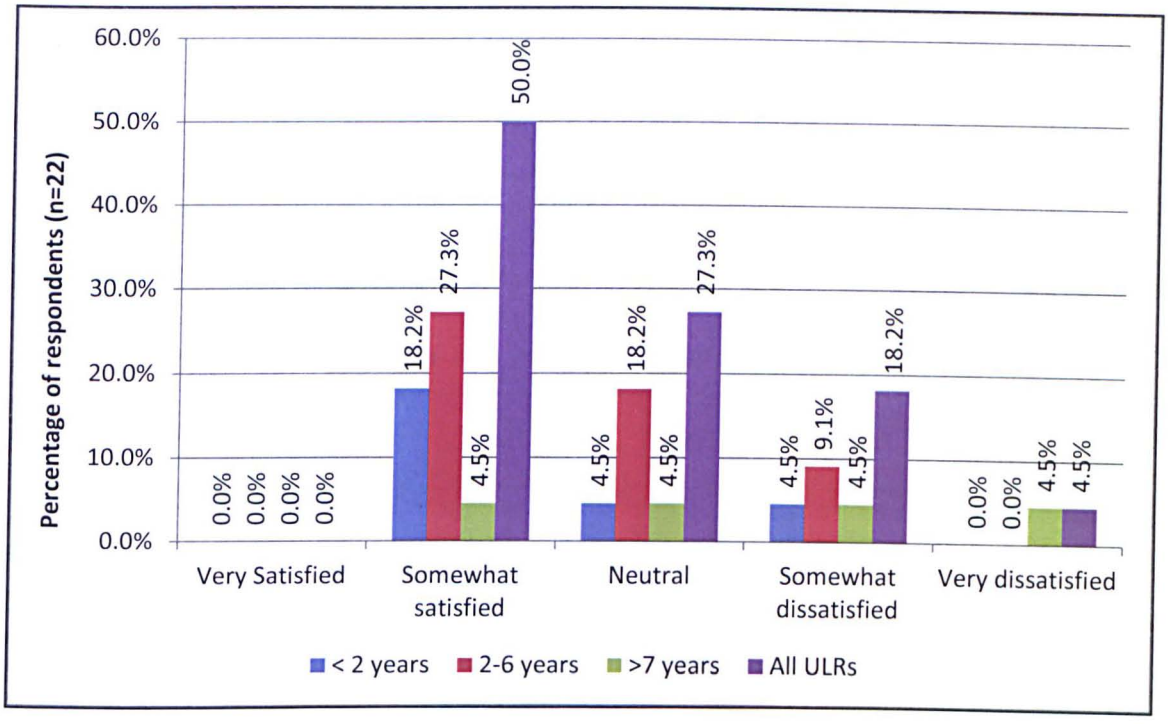
This analysis indicated that activity peaked for Phase 1.0 during the academic year 2006-07. Academic year 2005-06 stood out in that the lower quartile Q1 value decreased from 7.25 in 2004-05 to 3.75 in 2005-06. Taken together with the data in Figure 4.15 this indicated that in 2005-06 there were a higher number of threads started but with fewer posts in them. This raised the question of whether the focus or nature of the posts was different for this period and suggested this was an area to investigate in more detail in the

qualitative analysis. Furthermore there was a noticeable drop in the volume of posts and threads at the beginning of the academic year 2009-10.

Quantity of discussions has been frequently cited as an important indicator of the success of an online community (Iriberi and Leroy, 2009). Looking at the number of threads and posts in the forum an argument could be made that while the online community had experienced initial growth by the end of Phase 1.0 it was in decline. However, Iriberi and Leroy (2009) argue that other indicators of success are equally valid. In order to investigate if the ULRs considered Phase 1.0 a success they were asked to complete an online questionnaire in February 2011 in order to report their perceptions of its success. In February 2011 there were 76 accredited ULRs. However, only 36 were actively involved in attending meetings and replying to correspondence from Headquarters. Of the 36 active ULRs, 22 completed the questionnaire and had accessed Phases 1.0 and 2.0 (return rate 61.1%).

Aspects investigated included 'Overall Satisfaction' through to 'Ease of Navigation'. A Lirket scale was utilised with responses ranging from 'Strongly satisfied' (5) through to 'Strongly dissatisfied' (1). When the questionnaire was issued the ULRs had migrated to Phase 2.0 so questions relating to Phase 1.0 were answered from a historical viewpoint. As participant observations by the researcher had raised questions regarding the success of the community in terms of activity levels quantity of discussions was the starting point (Figure 4-18).

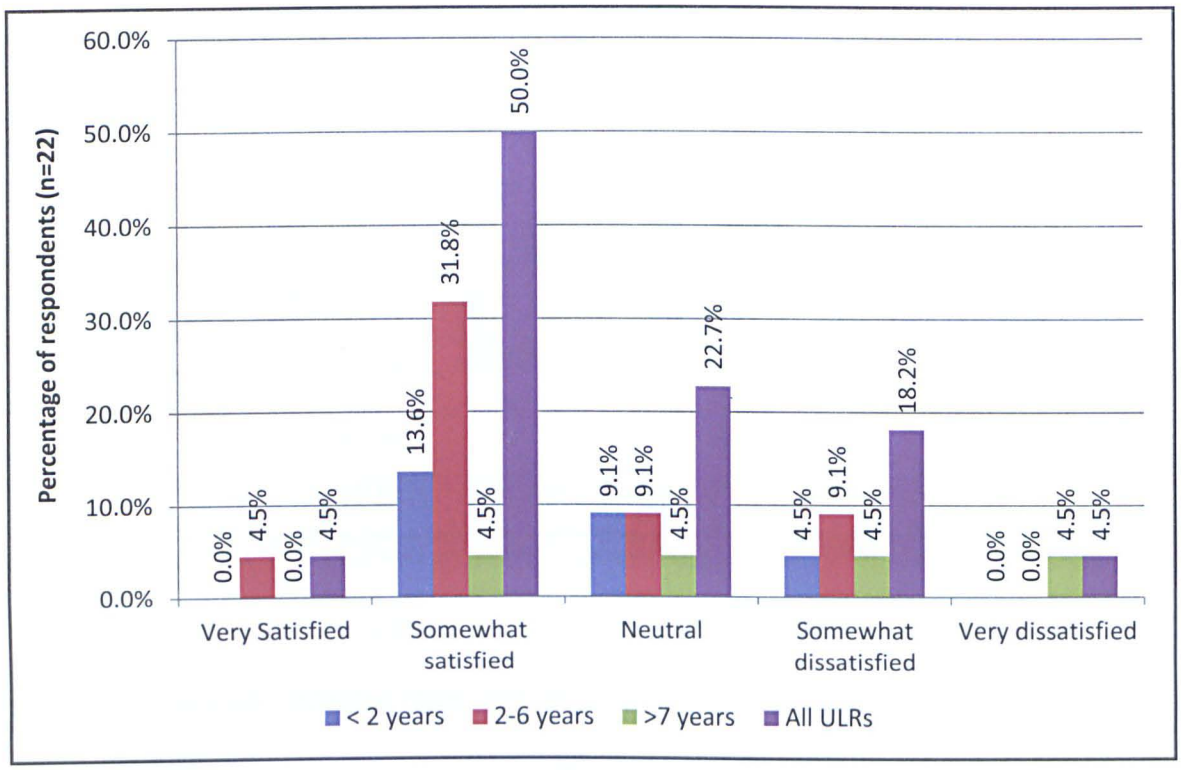
Figure 4-18. Question: Please rate your satisfaction with the following areas - Quantity of discussions Phase 1.0 forum (n=22).



The responses showed a neutral-satisfaction skew. 50.0% of respondents were 'somewhat satisfied' with the quantity of discussions and 27.27% were 'neutral'. Median satisfaction with quantity of discussion rating was 3.5 for Phase 1.0 (Appendix 16). This equated to a 'neutral-somewhat satisfied' response. When this was broken down by years of service as a ULR the picture changed slightly. ULRs with more than 7 years service were less likely to report a 'neutral-somewhat satisfied' response. A Kruskal-Wallis test was performed to determine if there were statistical differences in satisfaction with quantity of discussions between lengths of service groups. Satisfaction scores decreased with increasing length of service. Median scores for ULRs with less than 2 years' service was 'somewhat satisfied' (4.0), this decreased to 'neutral-somewhat satisfied' (3.5) for 2-6 years' service and decreased further to 'neutral-somewhat dissatisfied' (2.5) for greater than seven year service. The differences were not statistically significant (Appendix 16). However, this still suggested the drop in activity across Phase 1.0 was linked to length of service which could have contributed to the decline of the online community at the end of Phase 1.0.

ULRs were also questioned regarding their perception of the quality of the discussions that occurred during Phase 1.0 (Figure 4-19).

Figure 4-19. Question: Please rate your satisfaction with the following areas - Quality of discussions Phase 1.0 forum (n=22).



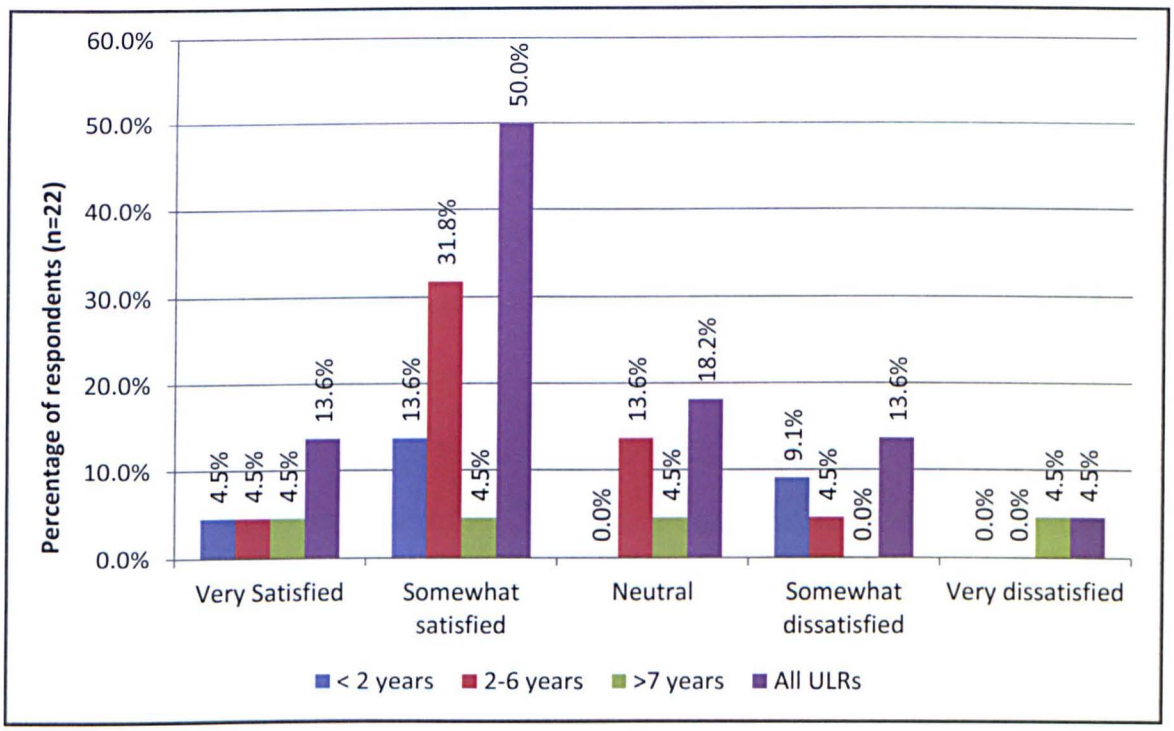
Looking at the total responses there was a neutral-satisfaction skew. 4.5% of respondents were 'very satisfied' (5.0) with the quality of discussions. Compared to quantity of discussions the percentage of respondents 'somewhat satisfied' (4.0) remained the same at 50.0%. The percentage of respondents with a 'neutral' (3.0) response was lower at 22.7%. Median satisfaction with quality of discussion was 'somewhat satisfied' (4.0) for Phase 1.0 (Appendix 17). When this was broken down by length of service once again there was a divide whereby longer serving ULRs were less satisfied with the quality of discussion.

A Kruskal-Wallis test was performed to determine if there were statistical differences in satisfaction with quality of discussions between lengths of service groups. Satisfaction scores varied with increasing length of service. Median scores for ULRs with less than 2 years' service was 'neutral-somewhat satisfied' (3.5), this increased to 'somewhat

satisfied' (4.0) for 2-6 years' service before it decreased to 'neutral-somewhat dissatisfied' (2.5) with greater than seven year service. Although the differences were not statistically significant they still suggested that more experienced ULRs were less satisfied with the Phase 1.0 which contributed to its decline (Appendix 17). What was different about this finding was that an increased number of new ULRs were less satisfied with the quality of discussion as opposed to quantity. This may have been caused by a lack of experienced ULRs being available to help and was explored in detail during the post content analysis (Section 4.7).

ULRs were then asked to consider their overall satisfaction with Phase 1.0 (Figure 4-20).

Figure 4-20. Question: Please rate your overall satisfaction with Phase 1.0 forum (n=22)

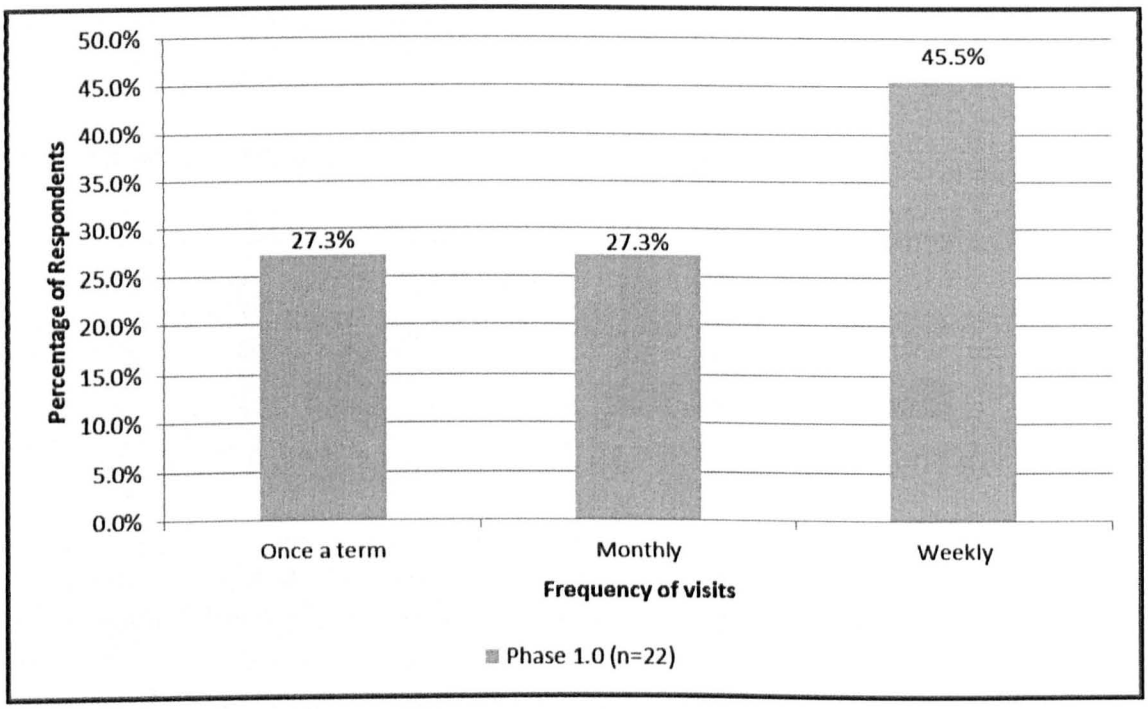


More ULRs reported overall satisfaction with the forum than with the quality or quantity of the discussions. The responses showed a neutral-satisfaction skew for Phase 1.0. 13.6% of respondents reported being 'very satisfied' (5.0) with the forum overall. 50.0% reported being 'somewhat satisfied' (4.0). 18.2% reported a 'neutral' (3.0) response. The median reported overall satisfaction level was 'somewhat satisfied' (4.0) (Appendix 18). A

Kruskal-Wallis test was performed to determine if there were differences in overall satisfaction levels between lengths of service groups. Median satisfaction for ULRs with less than 2 years' service and 2-6 years' service was 'somewhat satisfied' (4.0). This decreased to 'neutral-somewhat satisfied' (3.5) for ULRs with greater than seven year service. The differences were not statistically significant (Appendix 18). However, they did follow the pattern that longer serving ULRs reported less satisfaction with Phase 1.0.

The next step in the investigation was to determine if reported overall satisfaction level translated into increased frequency of visits as reported by the ULRs (Figure 4-21). Participant observations of Phase 1.0 posts showed that activity levels had declined. One explanation was that the two phenomenon were linked. Decreased activity led to decreased satisfaction which led to decreased visits.

Figure 4-21. Question: How often do you visit the Phase 1.0 forum (n=22)



45.5% of the respondents indicated that they visited the forum on a weekly basis. However 54.6% indicated that they visited the forum only once a month or once a term. Median reported values for frequency of visits to the forums was weekly during Phase 1.0

(Appendix 19). From Figure 4-21 it appeared that ULRs who were more satisfied overall visited Phase 1.0 more frequently.

A Kruskal-Wallis test was performed to determine if there were differences in overall satisfaction scores and frequency of visits. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Overall satisfaction score was statistically significantly different between the different frequency of visit group, $\chi^2(3) = 6.245$, $p = 0.044$. *Post-hoc* analysis revealed statistically significant differences in overall satisfaction score between the termly visitors and weekly visitors ($p = 0.040$) but not between any other combinations (Appendix 19). This suggested a correlation between overall satisfaction and frequency of visit. ULRs who visited weekly were more likely to report being satisfied overall than those who only visited once a term.

To summarise, following the first graduation of ULRs in June 2004 the need for an online community was established. This equated to the inception stage in the lifecycle. Phase 1.0 online community began in November 2004. This was the creation stage of the online community lifecycle. It then experienced a period of increased usage and activity that would correlate with the growth stage of an online community. This peaked during the academic year 2006-07 indicating the community had reached maturity. This was then followed by a period of decline that continued until the community migrated to Glow in November 2010.

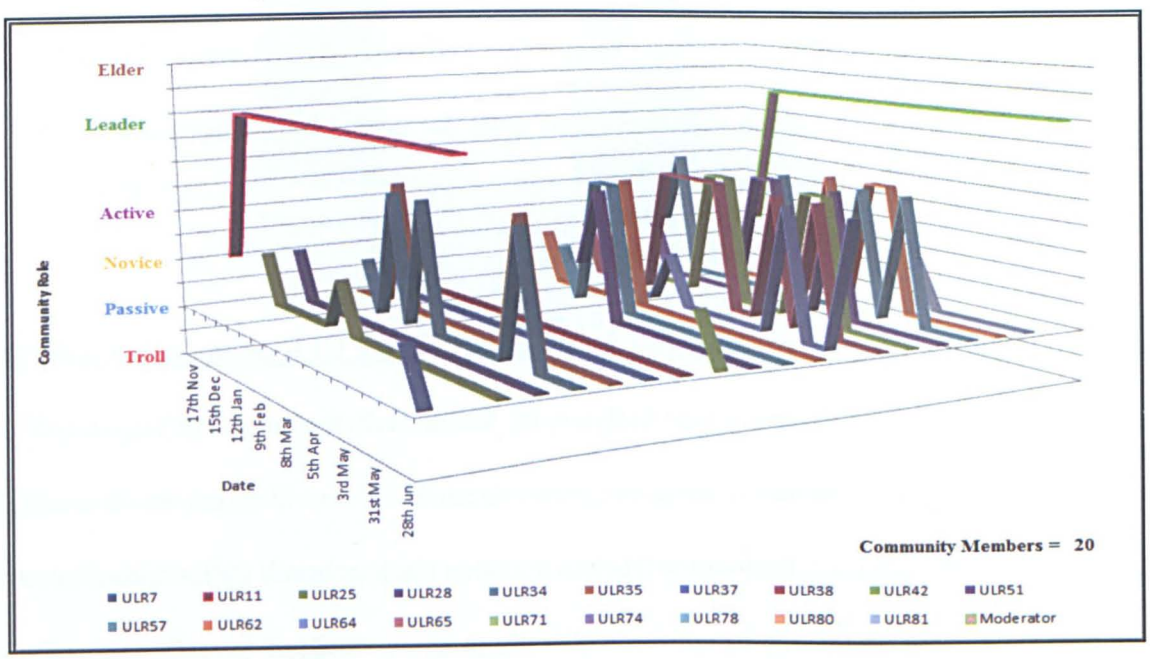
There were several possible explanations for the growth in the ULR online community that peaked in 2006-07. A macro level analysis of Phase 1.0 forum posts suggested the following explanations. The community grew because of an increase in community members who posted more frequently. However, other factors (such as increased need or stronger social ties) could not be eliminated without more detailed investigation of post

content. What was not clear was why the ULRs stopped posting so frequently in 2007-08. At this point the ULRs were still using technology they were familiar with which begged the question why did they stop engaging. One possible explanation emerged from responses to the questionnaire issued in February 2011 which suggested that more experienced ULRs were less satisfied than novice ULRs and frequented the forum less. In order to determine the actual causes of community growth and decline detailed examination of roles, *focus* and *nature of the interactions* was undertaken.

4.6 PHASE 1.0– COMMUNITY ROLES

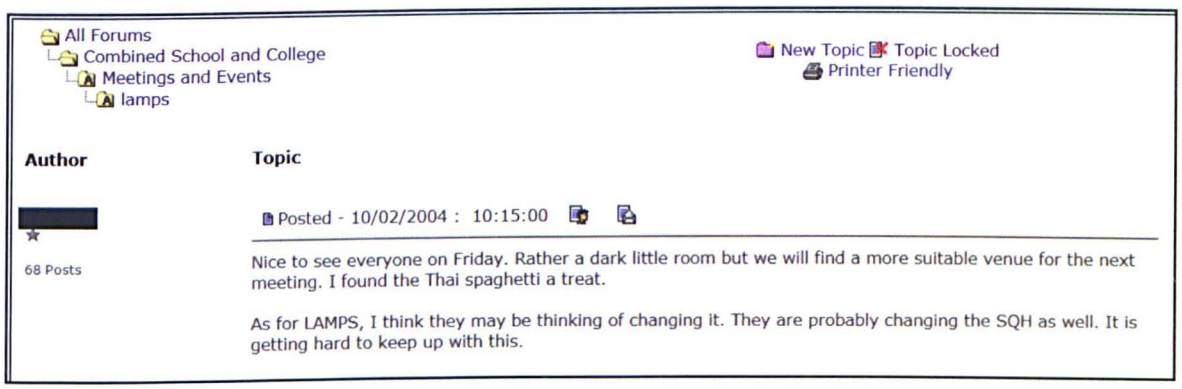
2003-04 was the first academic year for Phase 1.0. It was a partial year that ran from November 2003 until July 2004. In November 2003 the first ULR meeting since members became accredited in June 2003 took place. It was at this meeting the online forum was launched. A program of meetings for November, February and May was also agreed for each academic year. The meetings during this academic session focused on providing ULRs with the necessary knowledge to undertake their duties and develop the role within union structures and across the wider membership. The analysis began by looking at the roles adopted within the community (Figure 4-22).

Figure 4-22. Changing member roles 2003-04 (n=20)



The community comprised of 20 members, 19 ULRs and one full-time staff member Moderator). Everyone was a 'novice' the first time they posted. Core members fluctuated between active and passive roles. Kim (2000) argues that establishing initial Leaders is essential for the functioning of a community. Participant observations of their online behaviours indicated that ULR11 and Moderator met Leader criteria. The Moderator Leader was an EIS employee with the remit for overseeing the ULR initiative. Content analysis of their posts indicated they responded to queries related to EIS policy and disseminated information relating to governmental initiatives (Figure 4-23).

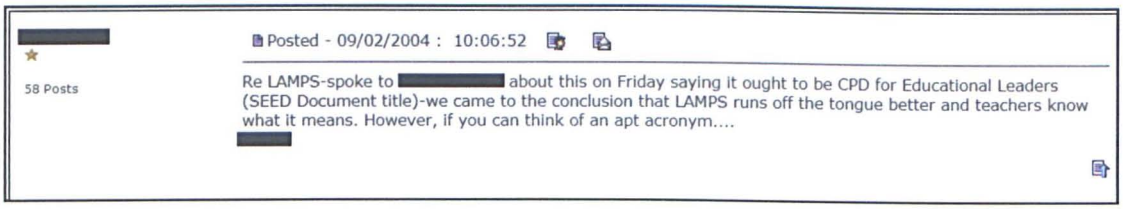
Figure 4-23. Example of query response by Moderator Leader



Their online and offline positions would have suggested an information dissemination model for the community if it were not for the fact they did not direct content, they responded.

ULR11 was a volunteer Leader in the offline and online community. They were not on the EIS payroll. Nor were they approached directly by the EIS to adopt a Leader role within the community. Instead they organically adopted the role as they responded to requests for help and shared information on national policies and new initiatives to stimulate discussions (Figure 4-24).

Figure 4-24. Example of query response by ULR Leader



ULR11 was not EIS staff but became a Leader as a consequence of becoming a ULR. This was pivotal in determining the nature of the group. Kim (2000) argued that the importance of volunteer Leaders is that as they are driven by personal desire and not financial remuneration they bring value to the community. Additionally, Preece (2006) argued the collective purpose of a community is critical to its viability. If all the Leaders had been EIS staff it would have raised questions regarding the group's purpose and ownership. The early establishment of a ULR volunteer Leader was an important indicator for success and suggested ULR ownership.

Four ULRs posted over one two-week time span and then never again. This phenomenon was repeated in subsequent years. Kim (2000) argued member retention is a concern for sustainability of the community. One possible explanation for ULR loss links with the work of Arrasvuori *et al.* (2008) who proposed a discover–join–abandon membership Life-Cycle. They argued that once an individual has discovered and joined a community their level of participation could vary before ultimately they may choose to leave. At this stage in the analysis the reasons for a decision to leave were not clear but it may have been linked to Preece's (2001; 2006) argument that for an online community to be successful it needed a shared purpose.

There was no evidence of trolls. There were several possible explanations for the absence of trolling during Phase 1.0, for example, strongly established group norms or offline relationships influencing online behaviour. However, the work of Hardaker in her study of

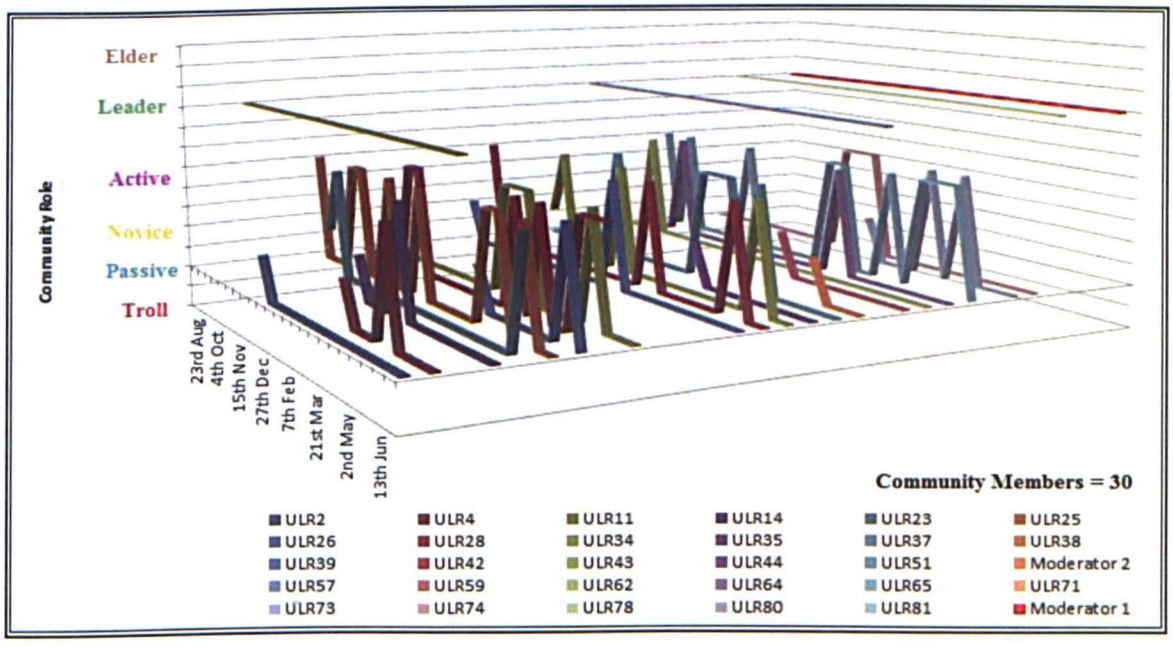
computer medicated communications suggested an alternative explanation. She developed the following definition for a troll as

> a CMC user who constructs the identity of sincerely wishing to be part of the group in question, including professing, or conveying pseudo-sincere intentions, but whose real intention(s) is/are to cause disruption and/or to trigger or exacerbate conflict for the purposes of their own amusement
>
> (Hardaker, 2010, p.237)

To become a ULR an individual had to apply to the EIS and complete a period of successful online study before gaining access to the group. Phase 1.0 involved a closed forum where everyone was identifiable. While a ULR could have constructed a false desire to join the ULR community they would have been identifiable and as such answerable to the community (online and offline). This would suggest it would have been difficult to gain amusement in such a scenario.

2004-05 was the first full academic year for the ULRs. During this time the ULR offline meetings focused on developing the ULR role, negotiating learning agreements on partnership working with local authorities and organising joint CPD events with local authorities funded by money from the Scottish Union Learning Fund (SULF). Confirmation of Leaders within the community was confirmed (Figure 4-25).

Figure 4-25. Changing member roles 2004-05 (n=30)

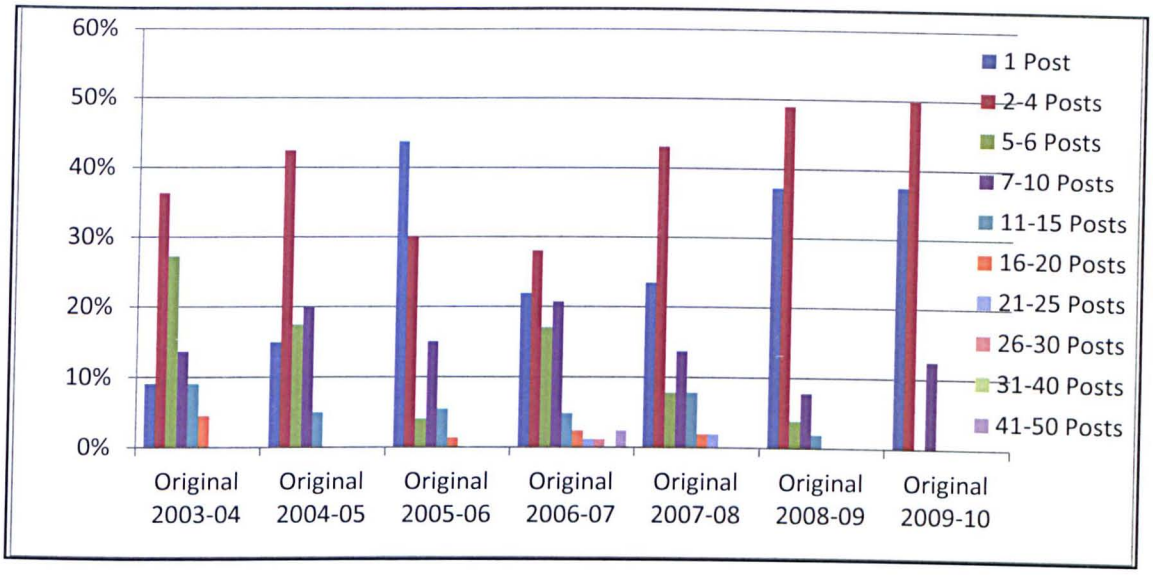


The membership increased to include 29 ULRs and two moderators (full-time paid union official). 10 new ULRs joined the group but this was off-set by 7 ULRs from the previous academic session not posting. Moderator 1 and ULR11 were joined by ULR57 and ULR78 to give 4 Leaders. ULR11 and ULR78 became increasingly involved in the offline community. Their offline activities included chairing working groups and leading activities at the face to face meetings. What was noticeable about the community Leaders is that although they answered questions and led discussions no one provided official 'welcoming' for new ULRs, an activity that would have been traditionally indicative of this role as argued by Kim (2000).

Following completion of the accredited ULR course all new members were sent an email with a password and username to access the community. However, at this time in Phase 1.0 there were no obvious welcome threads once participants had logged on. Schein (1984) argues that organisational culture and leadership are linked. Participant observations suggest the laissez faire approach to community Leadership and the induction of new members may provide one explanation for the low retention rates.

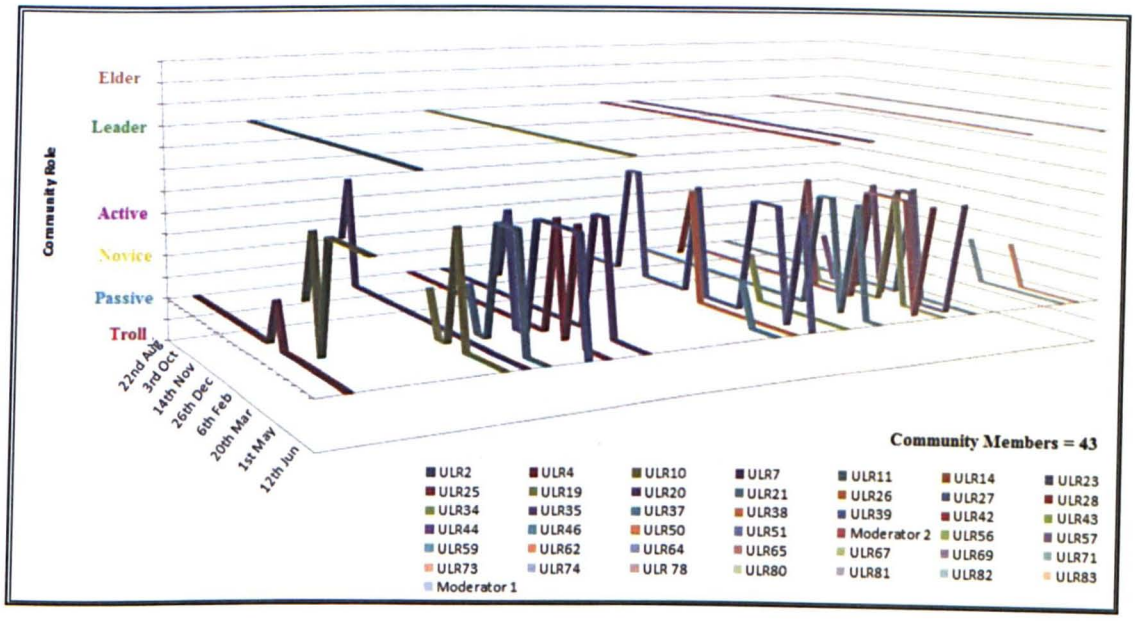
2005-06 was an unusual year. There were a higher number of threads containing fewer posts (Figure 4-26).

Figure 4-26. Number of posts per thread 2005-06



However, looking back to the box plot analysis (Figure 4-15 and 4-16), this change in pattern did not impact on the activity of the group and there was still an increase in the number of threads started and posts made compared to the previous academic year. This suggested that something different occurred this session. Evidence suggested this was linked to the community membership (Figure 4-27).

Figure 4-27. Changing member roles 2005-06 (n=43)



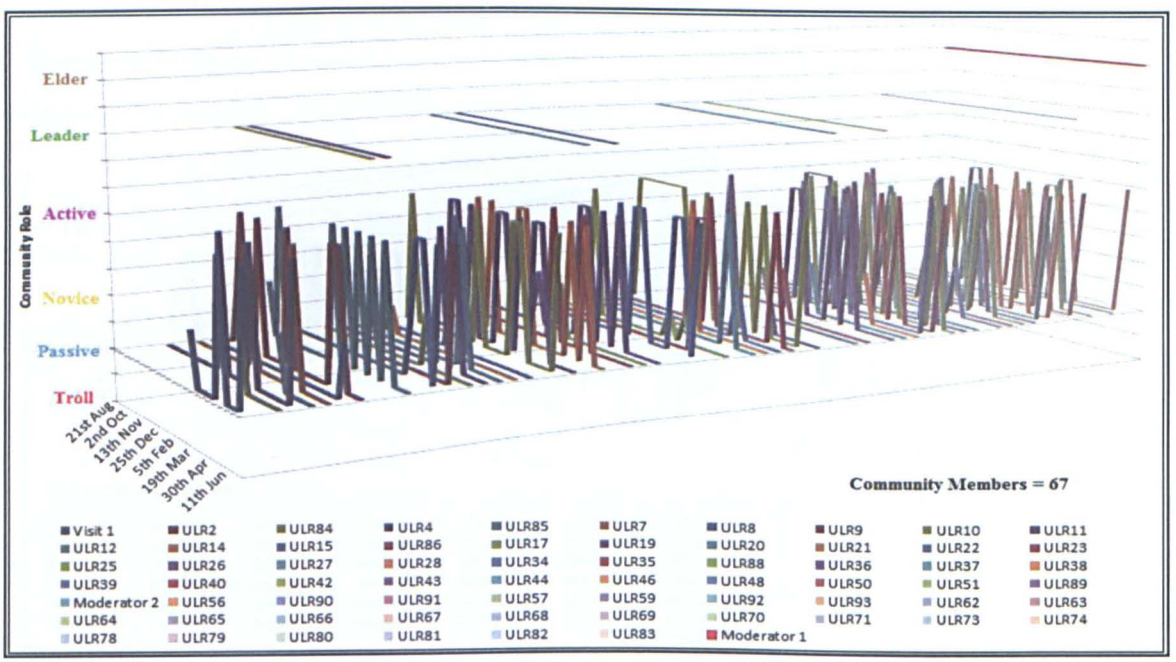
Moderator 2, who joined the EIS staff at the end of 2004-05, had progressed to Leader. This resulted in two staff Leaders. Moderator 2 assumed ownership for welcoming new

ULRs and the group saw the first 'Welcome' threads. ULR34 also progressed to Leader which resulted in 4 volunteer ULR Leaders. 13 ULRs joined the community but this was offset by 18 ULRs who stopped participating. This resulted in a net loss of community members; the first in the community history as members abandoned the group. Ren *et al.* (2012) argued the retention of active members is a significant worry for an online community as if too many people leave the community will ultimately fail.

However, this decrease in membership did not impact negatively on quantity of posts. As was seen from Figure 4-14 to 4-16 the community had still experienced growth. This suggested that the members who had participated were more active.

2006-07 was the most prolific year for Phase 1.0 in terms of number of threads, posts and ULRs contributing to the group. Analysis of the changing member roles for this year showed a number of changes that explained this proliferation (Figure 4-28).

Figure 4-28. Changing member roles 2006-07 (n=67)

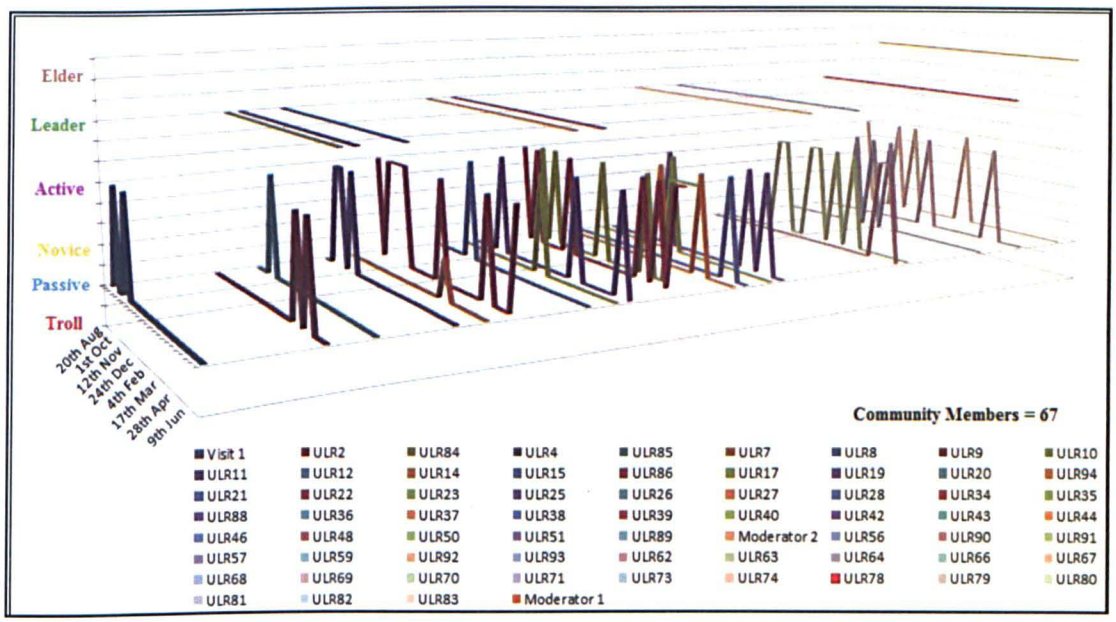


This year saw the most number of new members join at 24. But, crucially, it also saw the return of 9 ULRs who had not posted in the previous academic session(s). While there

were still 9 ULRs who did not post, the new / returning members resulted in the largest participating membership during Phase 1.0. ULRs who had previously abandoned the online group had returned. Unsurprisingly, this also coincided with the highest level of online activity. Critically this change in membership was not simply a numerical increase in numbers; it also involved the return of experienced ULRs.

2007-08 marked a pivotal point in the lifecycle of the community in Phase 1.0 as the online community entered a period of decline and activity levels dropped. In the offline community the popularity of joint CPD events with Local Authorities continued to rise with more ULRs organising them. This raised the question of why this decline occurred. A possible explanation for this decline was that an offline mentor program was started whereby each new ULR was paired with an experienced ULR, possibly negating the need for the online community. Figure 4-29 illustrates the changing roles for this year.

Figure 4-29. Changing member roles 2007-08 (n=67)

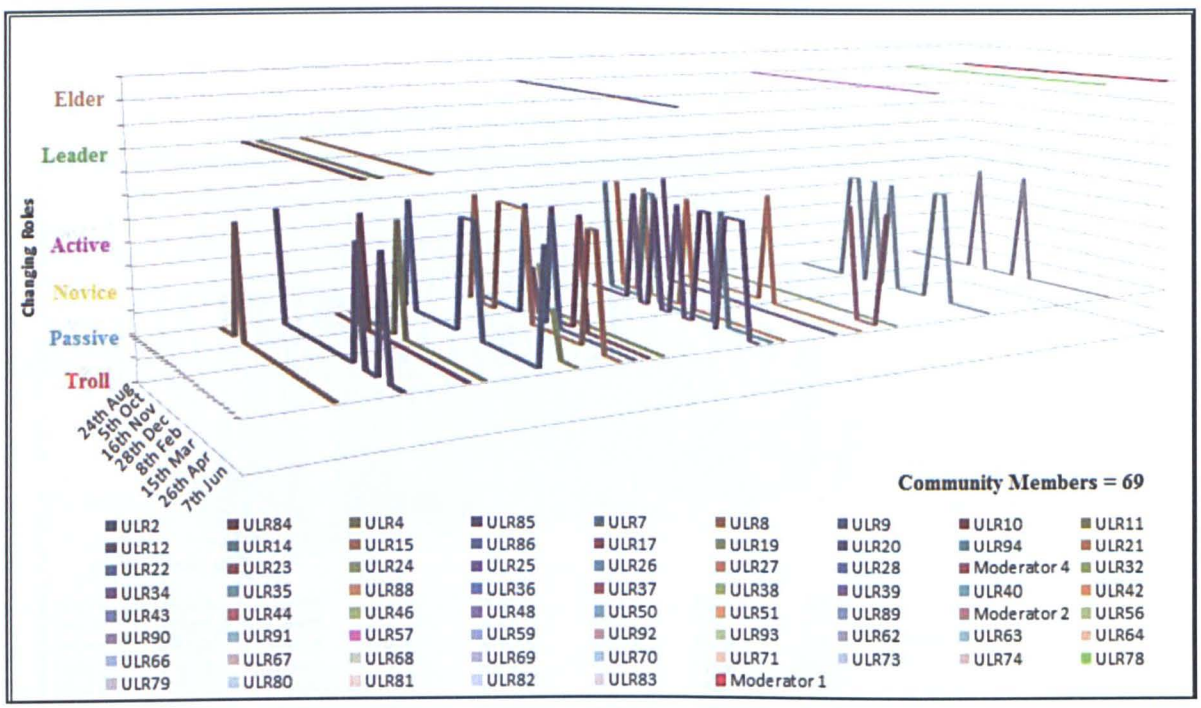


During this session there were 8 Leaders consisting of 7 volunteer ULRs and 1 staff official. Moderator 1 who had previously held a Leader role in the community progressed to Elder status with their official duties being taken on by Moderator 2. Crucially the

number of ULRs not posting increased to 38, once again they had abandoned the online group. This reduced the number of community members taking part in discussions to 29 and is one explanation for the group decline.

2008-09 saw a further drop in activity levels in the community. In the offline community the practice of pairing a student ULR with an experienced ULR to mentor them through the course and as an early accredited ULR was now standard practice. The face-to-face offline ULR meetings discussed topics such as the new school inspection process, professional recognition and the potential benefits of Glow. At the May 2009 meeting ULRs were informed their forum would be moving to Glow during the next academic session but no date was set. Online this session was characterised by a Leader vacuum (Figure 4-30).

Figure 4-30. Changing member roles 2008-09 (n=69)

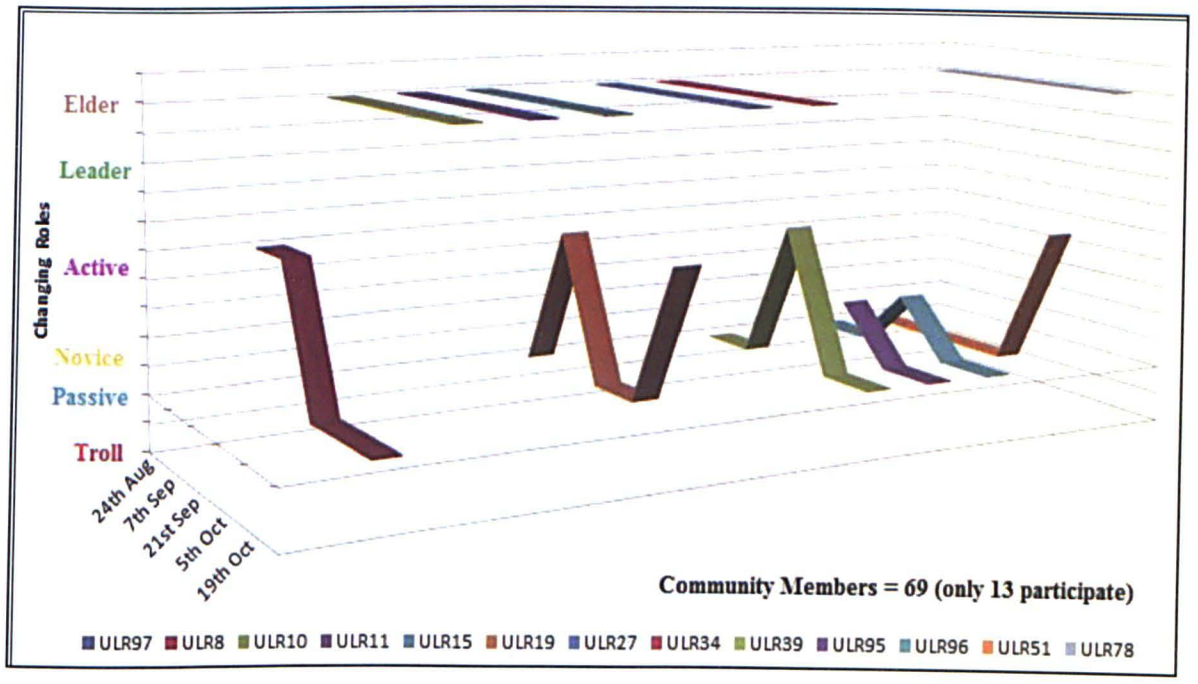


Moderator 2 was absent from August 2008 until April 2009 on a secondment. Moderator 1 remained in an Elder role. This left a vacant position in terms of a staff Leader providing input. Established Leaders ULR11, ULR34 and ULR57 moved to Elder status posting less frequently. 43 ULRs were Sabbatical and did not post at all. While 3 new members joined,

it was not sufficient to offset losses. Without a staff Leader there were no welcome threads or EIS initiated information dissemination threads. This is the most likely explanation for the low levels of participation as once again in accordance with Arrasvuori *et al.* (2008) model new ULRs chose not to participate and existing ULRs chose to abandon the group. Overall the picture was one of a community in decline as members left and Leaders moved on but were not replaced.

2009-10 was the transition year from Phase 1.0 to Phase 2.0. The ULRs had been informed at the May 2009 meeting that they would be moving to Glow during this session but no date had been set. The migration date was moved back several times due to problems, but eventually occurred in November 2009. Looking at the membership what was noticeable was that many ULRs left the online community before the migration (Figure 4-31).

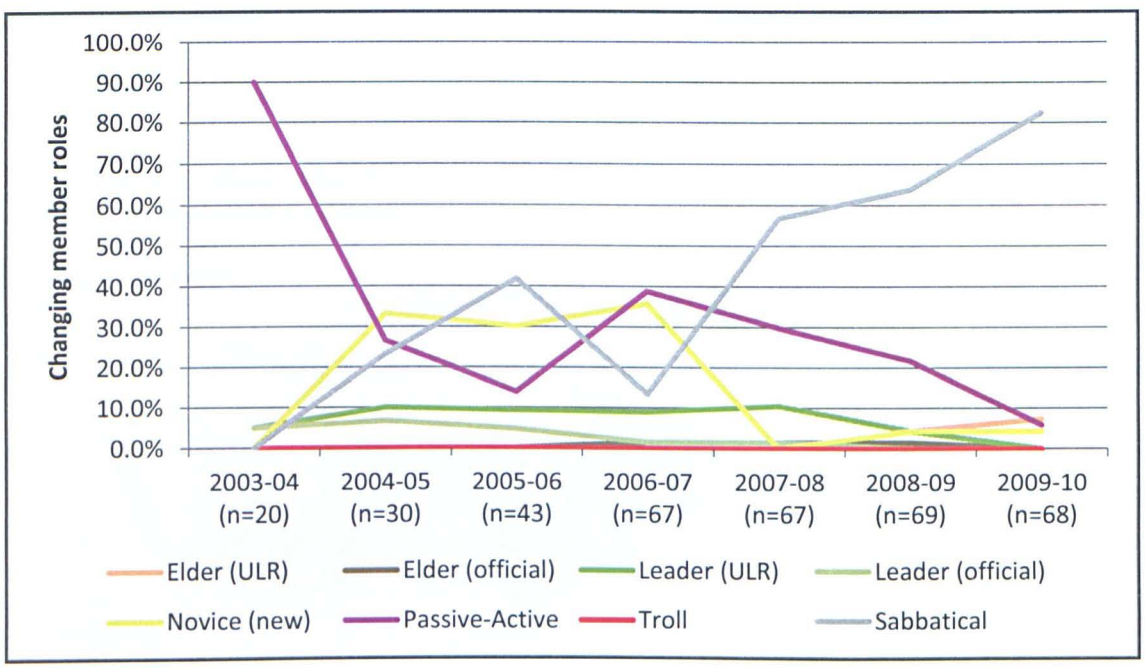
Figure 4-31. Changing member roles 2009-10 (n=69, only 13 participate)



Only 13 ULRs participated in the EIS forum in 2009-10 before it moved to Glow. Elder (ULR57) and Elder (Moderator 1) left the community completely. Leaders ULR10, ULR11 and ULR27 moved to Elder status. This left the community without Leaders at a critical juncture in its history.

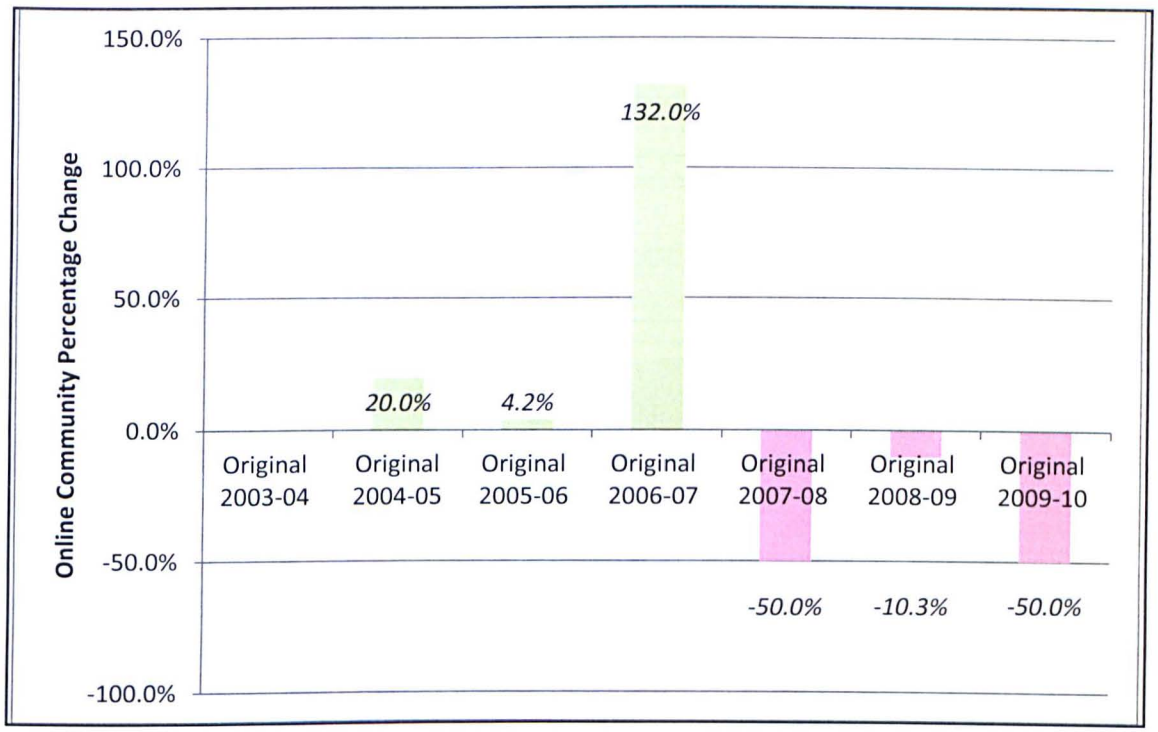
To summarise, at the beginning of Phase 1.0 there was evidence of community both staff and volunteer Leaders within the group. Critically from 2007-08 a decrease in community Leaders was observed as they progressed to Elder. Each year Novices joined the community. There was a core of members who fluctuated between Passive-Active. There was no evidence of Trolls. An ongoing concern throughout Phase 1.0 was evidence of an additional role, that of Sabbatical, ULRs who had posted once but then did not post again the following academic session. (Figure 4-32).

Figure 4-32. Overview of changing member roles for Phase 1.0 2003-10



During the last two years of Phase 1.0 this Sabbatical group dominated and the number of ULRs participating online declined as can be demonstrated by looking at the percentage increase / decrease of active participants in the online community (Figure 4-33).

Figure 4-33. Online community percentage increase / decrease for Phase 1.0

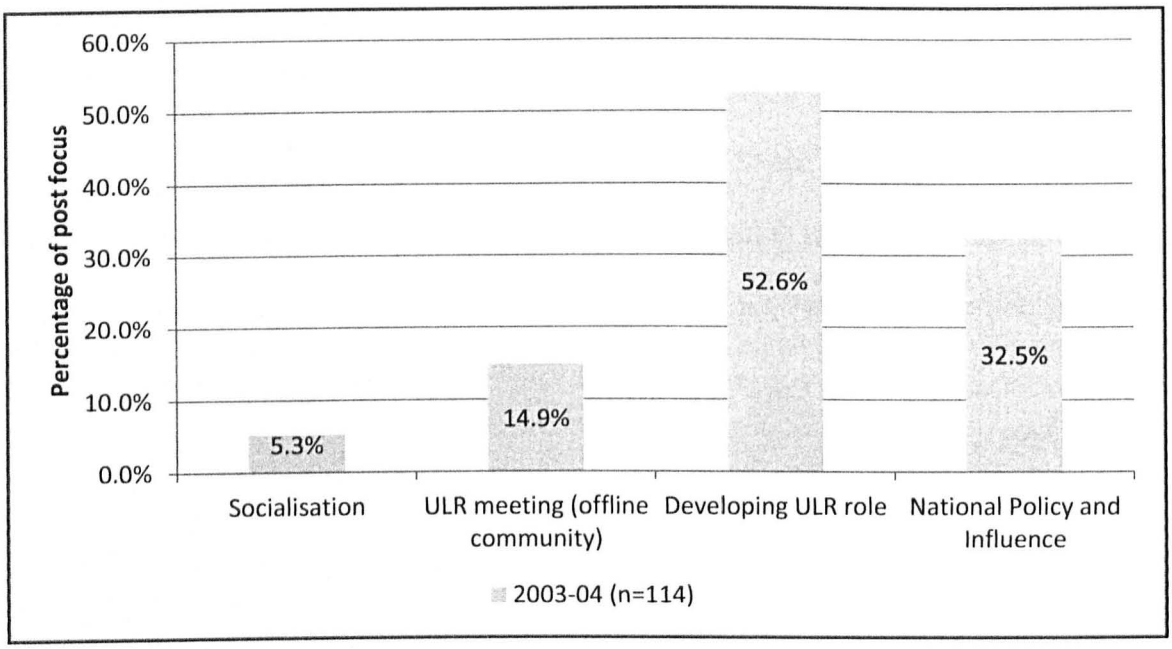


The percentage of ULRs who participated in the online group in 2006-07 increased 132.0% from the previous academic session. From 2007-08 onwards there was a decrease in ULRs participating, particularly in relation to volunteer and staff Leaders. This decrease in members corresponded with a decrease in posts and threads suggesting the two were linked.

4.7 PHASE 1.0 - *FOCUS* OF DISCUSSIONS

In order to obtain further insights into the nature of the Phase 1.0 community the *focus* of each post was thematically coded using the framework outlined in Section 4.4 to establish the community purpose. 2003-04 was the start of both the ULR initiative and the online forum (Figure 4-34).

Figure 4-34. *Focus* of discussions 2003-04 (n=114)

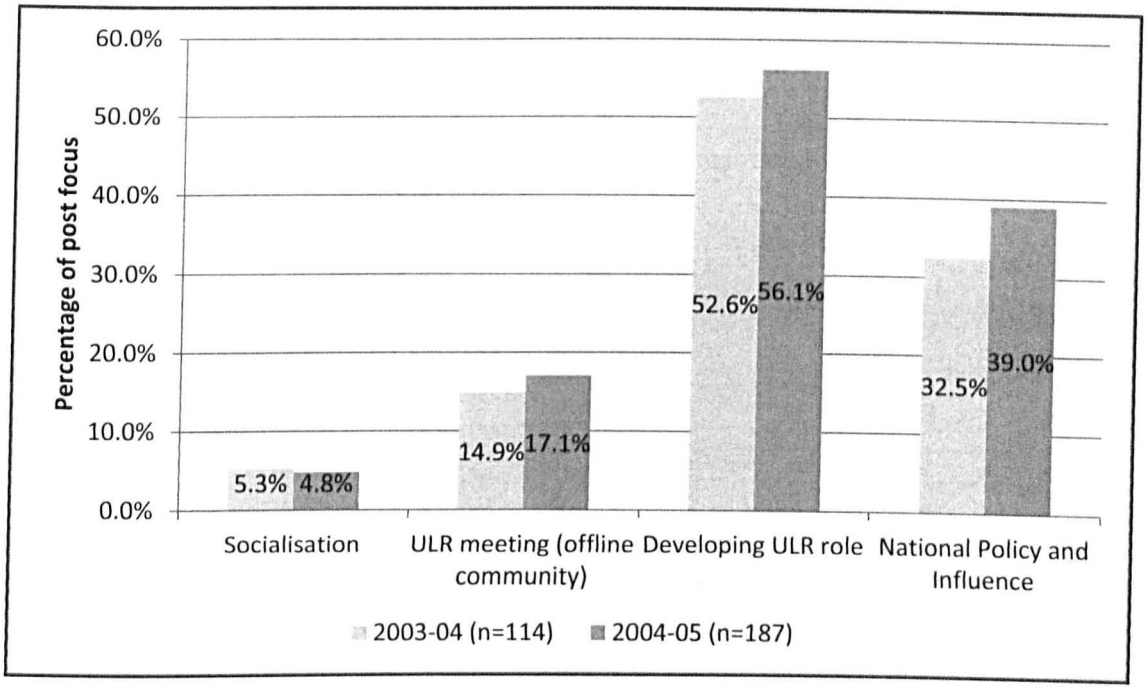


In the first year developing the ULR role was the most popular *focus* (52.6%). 'Socialisation' was the least (5.3%). This seemed to run contrary to the socialisation to information exchange to knowledge construction model cited by Salmon (Salmon 2004; Salmon 2013). One explanation is that because they had pre-existed as an online group during their training they did not require a period of group building as this had already occurred. Similarly the links built in the physical world may have negated the necessity to group build online as social links already existed. A further explanation could have been that socialisation was not considered necessary by the group. Certainly Figure 4-34 suggested that discussions focused on 'Developing ULR role' were an important purpose for Phase 1.0.

Although the ULR role was still developing within EIS structures the ULRs were focused on discussing 'National policy and influence', namely, Chartered Teacher (30.0%). Similarly 'Developing the ULR role' in particular making contact with members was also a popular concern. There was evidence of a cross over between the online and offline world as 14.9% of posts related to follow-on discussions from 'ULR meetings', a positive indicator for community success.

During **2004-05** a similar pattern of interest was observed (Figure 4-35).

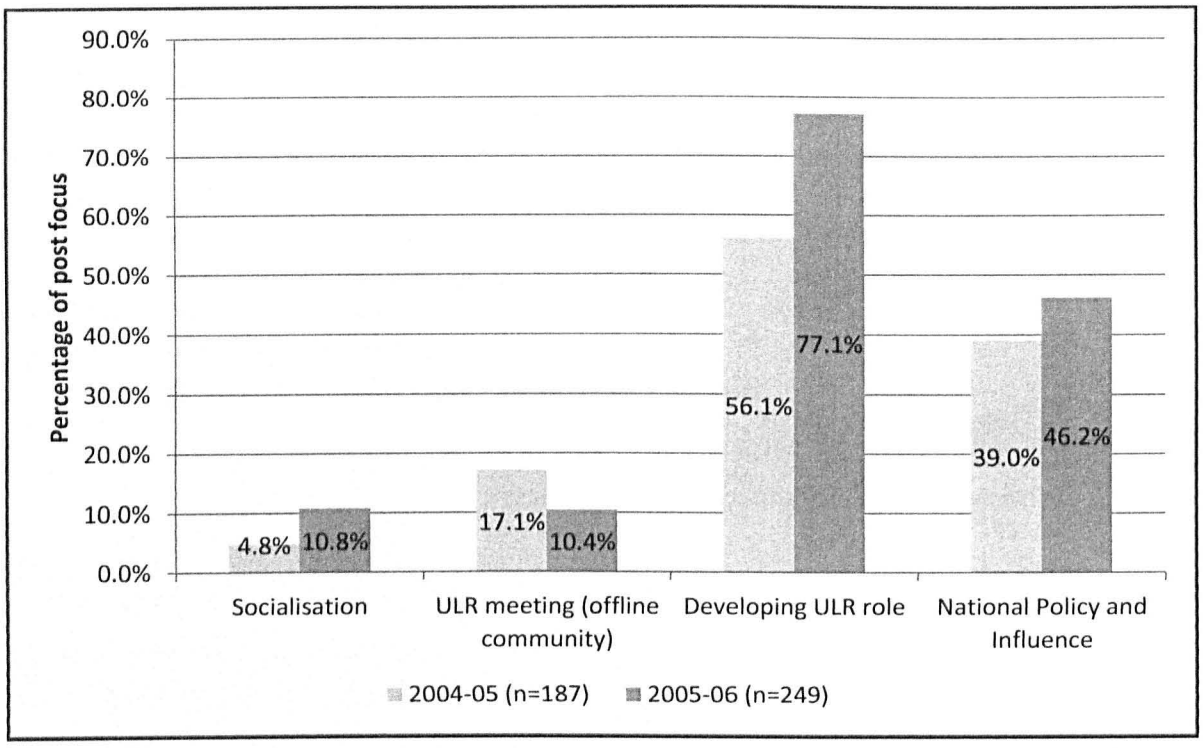
Figure 4-35. *Focus* of discussions 2004-05 (n=187)



'Developing the ULR role' increased from 52.6% to 56.1%. A similar increase was seen for 'National policy and influence' (up to 39.0%) and follow-on discussions from the face-to-face 'ULR meetings' (up to 17.1%). Only 'Socialisation' decreased from 5.3% to 4.8%. Under the focus 'National policy and influence' posts related to the newly created position of Chartered Teacher accounted for 29.0% of all posts. This added weight to the suggestion this was an online community focused on developing ULR professional practices and engaging with national policy and initiatives, particularly the Chartered Teacher program. It also suggested that overt online socialisation was not a priority.

2005-06 was the unusual year that saw an increased number of threads but containing fewer posts per thread. The membership was characterised by a loss of experienced ULRs online as they abandoned the group. However, this did not impact hugely on the *focus* of discussions (Figure 4-36).

Figure 4-36. *Focus* of discussions 2005-06 (n=249)



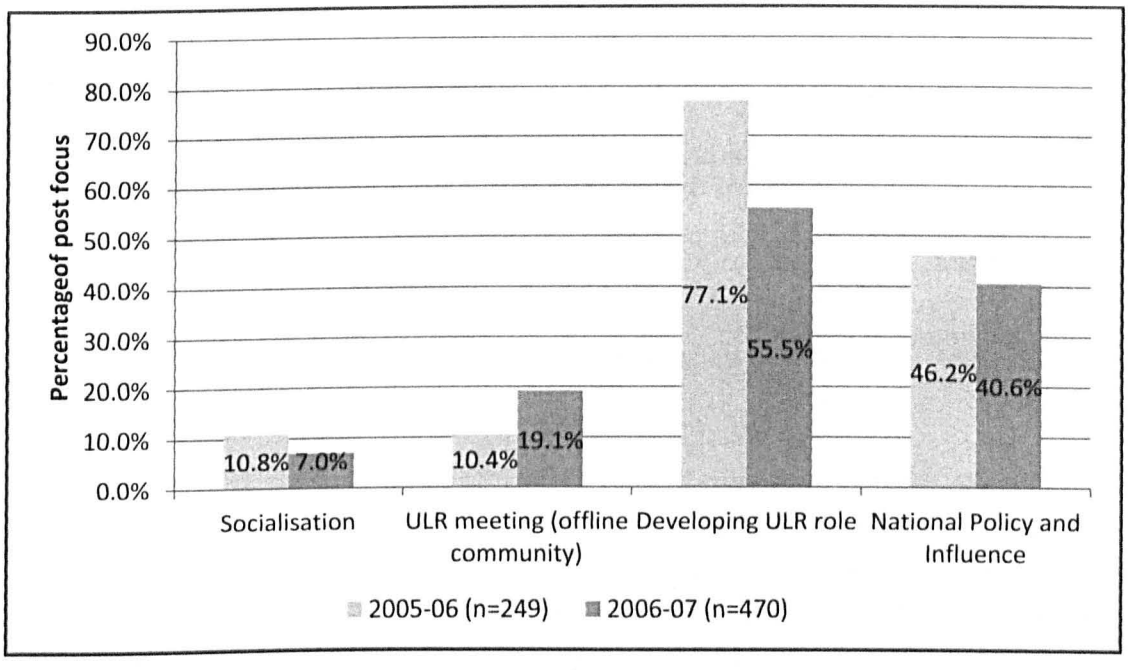
Posts related to 'Socialisation', 'Developing ULR role' and 'National policy and influence' all increased. The only area to see a decrease was posts linked to follow-on discussions from the 'ULR meetings'. However, while the numbers has increased the content had not changed. Under the focus 'Developing the ULR role' 3.0% of all posts related to the organisation of ULR led CPD Events. These CPD events were a new union initiative whereby a ULR would work in partnership with their Local Authority to organise a training session for teachers. In 2005-06 'National policy and influence' posts related to Chartered Teacher continued to be popular accounting for 28.0%. Linked to 'Socialisation' for the first time there was evidence of 'welcome' messages for new ULRs from Moderator 2 consistent with a Leader role. However, these threads were short with only established ULRs and not new ones responding.

These findings added further weight to the suggestion that overt socialisation was not a key purpose of the group. Instead discussions focused on developing a structure and a purpose for the newly created ULR position were. Although the ULRs had existed for 2 years in

2005-06 they were not then embedded within the union or Local Authorities at either National or local level. This lack appeared to create a communal purpose for the group that the ULRs could buy into.

In contrast **2006-07** saw a return of experienced ULRs to the community which, combined with new ULRs, saw the largest participating membership. This produced some unexpected results in that 'Developing the ULR role' and 'National policy and influence' decreased (Figure 4-37).

Figure 4-37. *Focus* of discussions 2006-07 (n=470)



'Developing the ULR role' decreased from 77.1% to 55.5% compared to the previous academic year. Given the number of new members who joined in 2007-08 a reasonable expectation would have been to see an increase in this *focus*. This did not happen. However, analysis from the membership of the group indicated a return of experienced ULRs. Interrogation of the post *focus* indicated these returning members were not focused on developing the ULR role. Nor was there a strong focus on discussions related to 'National policy and influence'. Follow-on discussions from ULR meetings almost doubled to 19.1%. This suggested a strengthened link between the offline and online

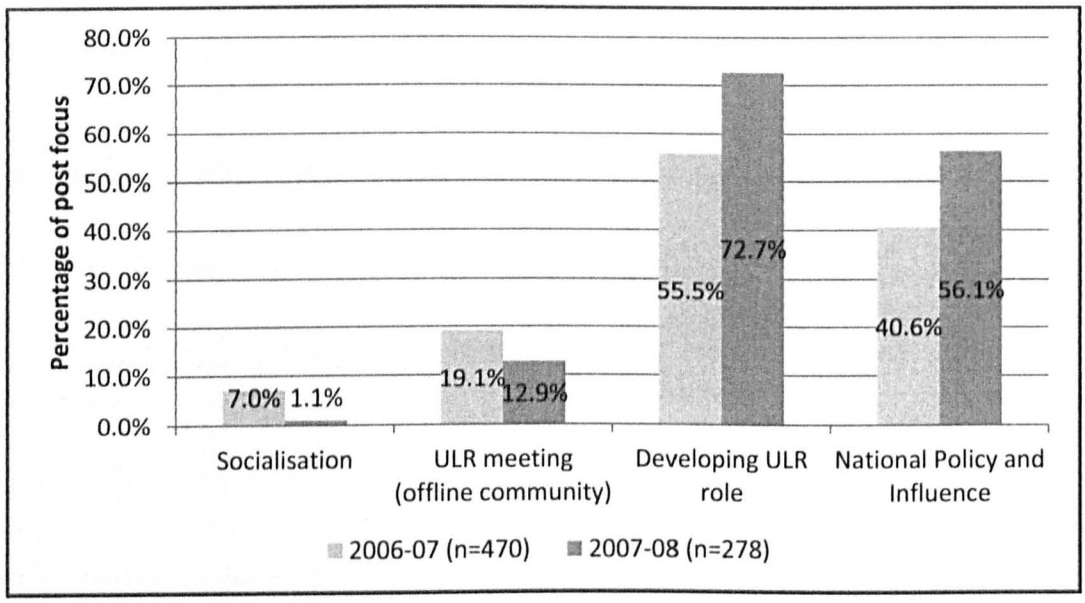
world. During this session in addition to the annual three ULRs meeting there had been additional meetings to provide CPD training for ULRs and a networking meeting at the Scottish Learning Festival. Consistent with the findings of Goodsell and Williamson (2008) these additional offline meetings stimulated online discussion (Figure 4-38).

Figure 4-38. Additional ULR offline meetings during Phase 1.0

Topic	Author	Replies	Read	Last Post
STUC LR conference Inverness	[redacted]	4	53	**17/06/2007** 00:34:05 by: [redacted]
Chartered Teacher Conference	[redacted]	7	82	**10/06/2007** 23:30:41 by: [redacted]
Smarter Scotland: Showcasing Dyslexia in Scottish	[redacted]	1	17	**05/06/2007** 09:58:50 by: [redacted]
Enhanced Inclusive Practice Education Conference	[redacted]	8	73	**04/06/2007** 20:35:10 by: [redacted]

2007-08 marked the beginning of the decline for Phase 1.0 as once again ULRs abandoned the online group. Looking at the *focus* of the posts there were contrasts with the previous academic session (Figure 4-39).

Figure 4-39. *Focus* of discussions 2007-08 (n=278)

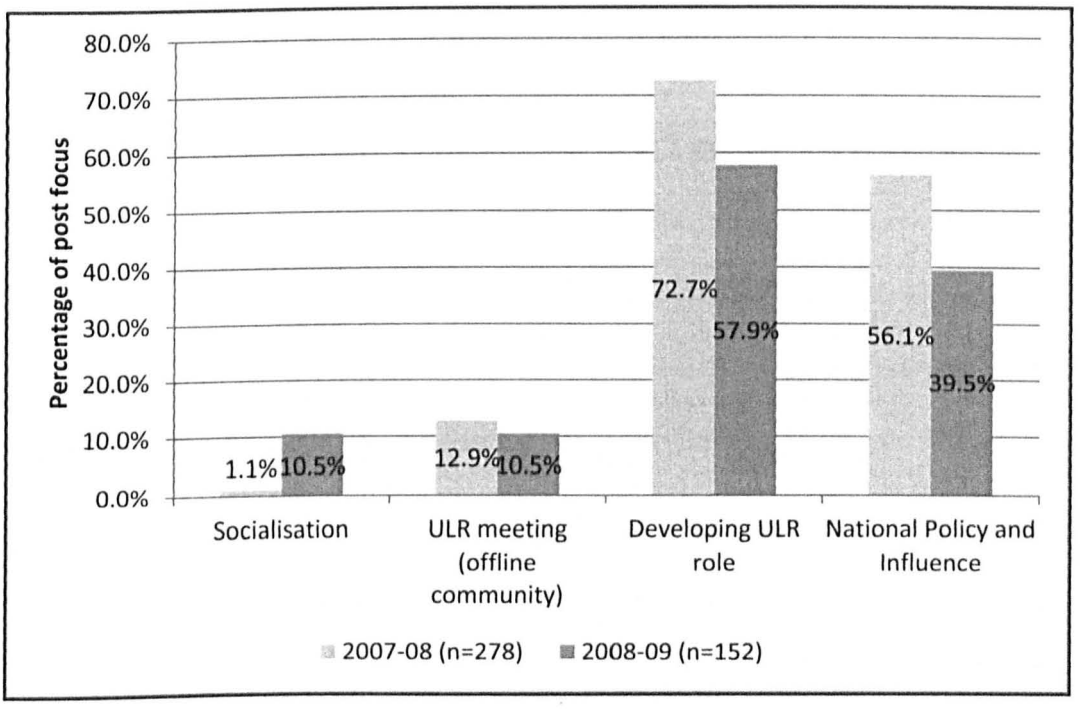


'Developing the ULR' increased again as a focus topic from 55.5% to 72.7%. Posts related to 'National policy and influence' increased from 40.6% to 56.1%. However, Chartered

Teacher related posts only accounted for 19.0%. This was a decrease on previous years. Instead the *focus* was on the day to day duties of a ULR. Given this coincided with experienced ULRs returning to a passive state it suggested these topics were of more interest and importance for more newly accredited ULRs. 'Socialisation' decreased as a focus; this suggested the forum was once again more 'business' orientated.

2008-09 was characterised by the loss of both established volunteer and staff Leaders with no ULRs progressing to take their place. The analysis of roles raised questions about why individuals became less active and why new members seemed less inclined to take on Leader roles. The *focus* of the discussions and offline context was analysed to investigate the impact this had on what was being discussed (Figure 4-40).

Figure 4-40. *Focus* of discussions 2008-09 (n=152)

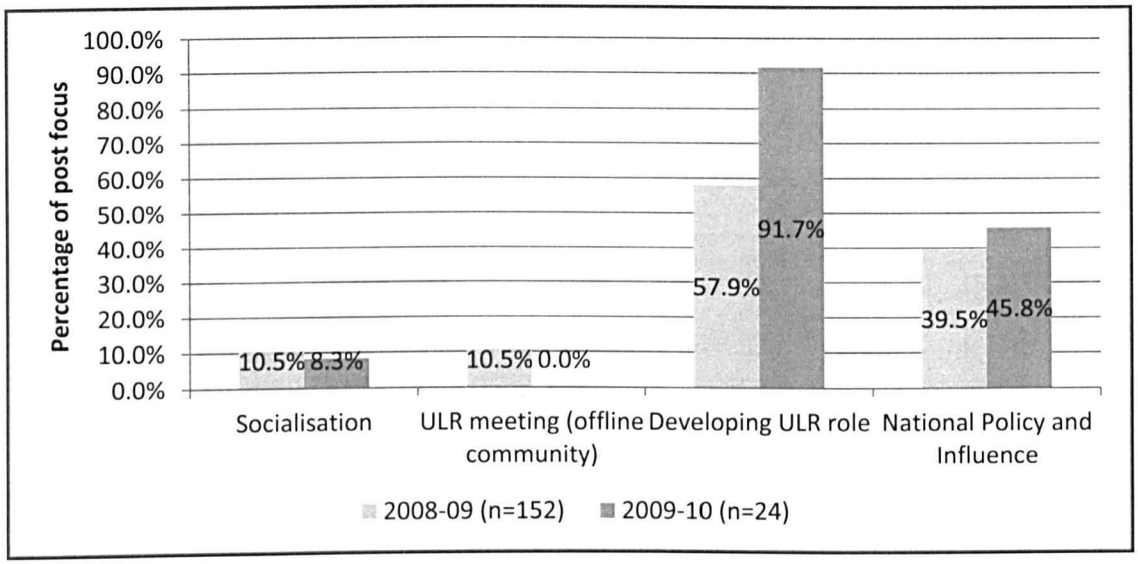


In **2008-09** follow-on discussions from the 'ULR meetings' saw a decrease to 10.5% this suggested a weakened link between the offline and online community. Offline ULRs reported it was increasingly hard to obtain 'time-off' to attend meetings. 'Developing the ULR role' saw a decrease in *focus* to 57.9%, discussions on CPD events only accounted for 2.0% of this total. (Additionally this resulted in a drop in actual number of posts

compared to the previous academic session). Discussions focused on 'National policy and influence' decreased although posts specifically related to Chartered Teacher accounted for 30.0% of this total. Only 'Socialisation' increased. The decrease in posts focused on 'National policy' and 'Developing the ULR role' suggested the online community no longer felt the need to discuss these activities. Either they were no longer relevant or they had become so routine there was no need for discussions.

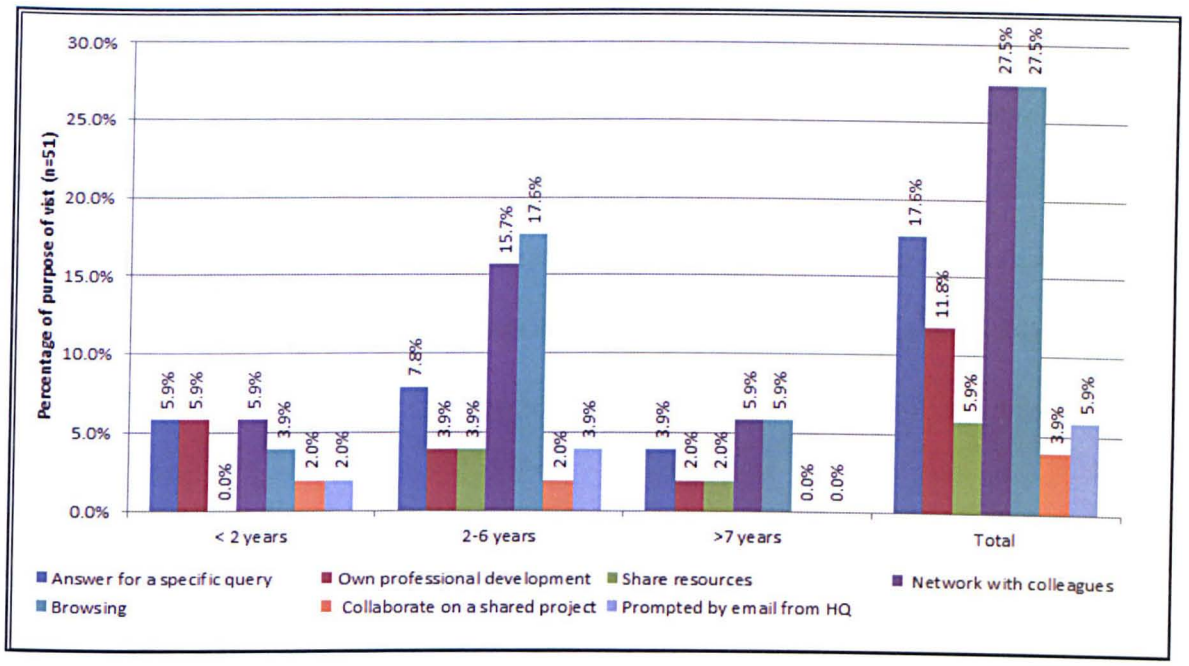
Analysis of the **2009-10** discussions showed a similar *focus* pattern as previous years. 'Developing the ULR role' and issues related to 'National policies and Influence' continued to be central to the purpose of the online community. However, given the small number of postings (24) caution was applied when interpreting this data as it could have been skewed by the low values. Figure 4-41 is shown below for illustrative purposes only.

Figure 4-41. *Focus* of discussions 2009-10 (n=24)



Oberservations indicated that the central purpose of Phase 1.0 was to develop the ULR role and discuss National policy issues and initiatives. During the questionnaire issued in February 2011 ULRs were questioned regarding their **Reason for Visit** to enable triagnulation of what was observed with what was self-reported. ULRs could report more than one reason for visit (Figure 4-42).

Figure 4-42. Question: Reason for visiting Phase 1.0 forum (n=51)



New ULRs with less than 2 years' service cited looking for 'answers to a specific query', their 'own professional development' and to 'network with colleagues' as being as equal reason for their visit (5.9%). Unsurprisingly they did not go online to 'share resources'. 'Networking' and 'collaborating' were equally cited as a reason to visit (2.0%). In contrast ULRs with 2-6 years' service were more likely to visit to find an 'answer to a specific query' (7.8%), 'network' (15.7%), 'browse' (17.6%), 'share resources' (3.9%) and when 'prompted by HQ' (3.9%). Whereas, ULRs with more than 7 years' service were more likely than new ULRs to 'share resources' but less likely than ULRs with 2-6 years' service (2.0%). However, they were less likely to 'browse', 'look for answers' or 'network' than their mid-service colleagues.

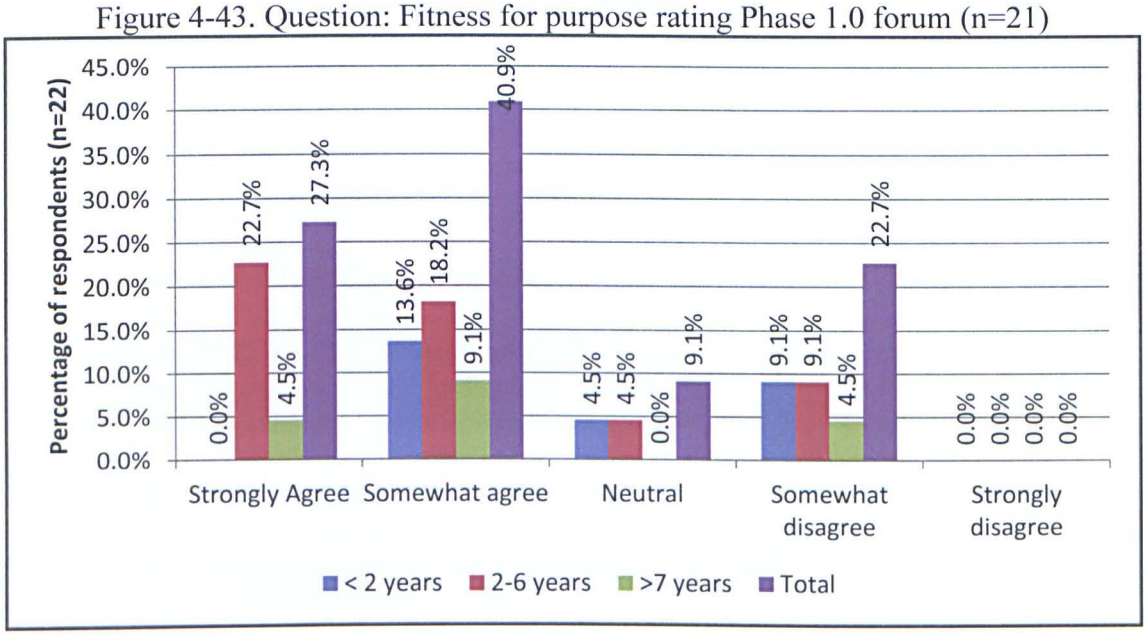
Other reasons for visiting the Phase 1.0 included:

- To get a feel for the role at beginning
- The online facility was there when you wanted to use it. If I needed it for networking or finding out information I could go there but I didn't often need to do that. If others felt like this, then there wouldn't be many people populating the facility when you did decide to visit it.

The comment "*To get a feel for the role at beginning*" added weight to the argument that the forum went into a period of decline because once the ULRs had a feel for the role the forum no longer had a purpose. It supported the supposition that Phase 1.0 was used when needed. Similarly the second comment provided evidence that ULRs participated online on a need basis to develop their role and discuss national policy initiatives. If the need was not there they did not go. This explained the loss of membership and the decline in activity associated with this loss.

The last area investigated asked the ULRs to consider if the forum was **Fit for purpose** (Figure 4-43).

Figure 4-43. Question: Fitness for purpose rating Phase 1.0 forum (n=21)



ULRs were asked to indicate if they agreed, were neutral or disagreed with the statement "*Is online group fit for purpose*". There was an agree-neutral skew. 54.6% of respondents indicated that the group was fit for purpose. 22.7% adopted a neutral stance. Only 22.7% of respondents disagreed. (Appendix 20). A Kruskal-Wallis test was performed to determine if there were differences in length of service and **fitness for purpose**. ULRs with less than two years' service were less satisfied with the Phase 1.0 fitness for purpose (Mdn = 2.0) than other ULRs. ULRs with service between 2 and 6 years and greater than 7 years reported a higher level of satisfaction (Mdn = 4.0). However, the differences were

not statistically significant, $\chi^2(3) = 5.147$, $p = .161$. Bringing together results from fit for purpose and observations of ULRs joining and leaving Phase 1.0 this suggested the purpose of the group was to provide information as required. If nothing was required some ULRs did not feel the need to visit the group.

In order to further investigate the purpose of Phase 1.0 further semi-structured interviews were undertaken in February 2012 (Appendix 6).

Describing their experiences of Phase 1.0 ULRs reported feelings of ownership and security that allowed them free expression as evidenced in the quote below:

> I took part in that one more because it was under our control. The EIS owned it we operated it. And I felt that it was being seen by likeminded colleagues who were involved in our Trade Union and as such there was a certain degree of shall we say . . . It wasn't going to be looked at by management. Which was fine. Because I think you were freer to express what you wanted to say. Perhaps to highlight the pros and cons of things you were doing at the time.
>
> (ULR interview)

This supported the suggestion that ULRs perceived their community as one of professional collaboration where they could discuss issues and develop their role.

One ULR provided an explanation for Phase 1.0 period of growth and decline. The ULR was one of the first to become accredited and had witnessed Phase 1.0 in its entirety.

> I have been a learning rep now since they first came into being. I think it was away back in about 2003 2004 and throughout my time eh as a Learning Rep I have seen the role evolve and change. Initially there was a great focus on the Chartered Teacher and supporting people who were going through that process. Obviously we [now] have CPD events which we do in relation with the Local Council. We do at least one a year.
>
> (ULR interview)

This quote supported the observations that the ULR initiative was linked with the Chartered Teacher program. Another initiative that started early in Phase 1.0 were joint

CPD events hosted with Local Authorities. The quote above supported observations and suggested this was also central to developing the ULR role.

When describing their experiences during Phase 1.0 a ULR provided an insight into their 'lurking' behaviour which explained why some ULRs may not have add to threads during Phase 1:

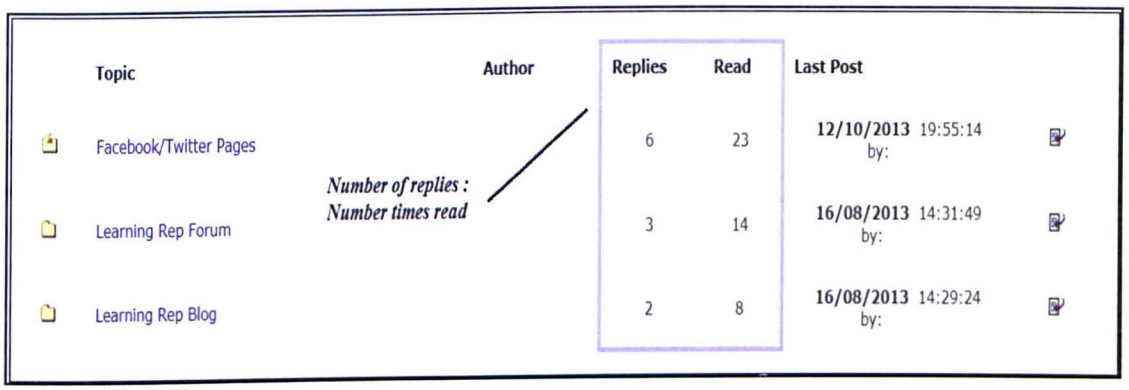
> yeah I must admit I tend to be a lurker on any blackboard or sort of situation like that. But I do enjoy reading posts. And it is usually the inevitable where you think somebody has written something up and you think "Oh!" but someone beats you to a reply. You know "Oh thats what I was going to say more or less so you tend to leave it".
>
> (Interview with ULR)

This indicated that one of the reasons they did not post was not because they did not want to but because they did not feel it was necessary. However, the ULR went on to describe how they gained personally from reading the posts on Phase 1.0.

> What I did like about it was I did access it and I did read the comments that were there because there were people who were in different parts of the country having different experiences and that gave you a broader overview of the other things you could do or be involved in that maybe you hadn't thought about. There was support there.
>
> (Interview with ULR)

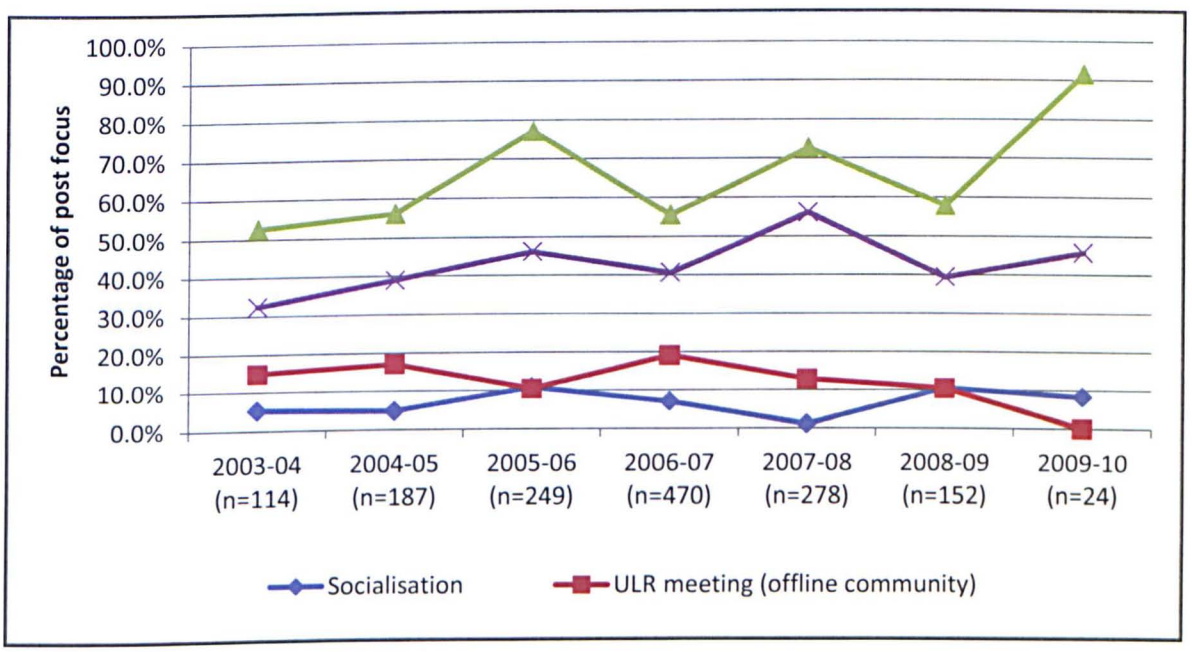
This can be substantiated by looking at the record of the number of replies to a post and the number of times a post has been read. Each time a thread was opened and read it increased the read count. Therefore one individual could generate multiple read counts by opening the thread a number of times. This suggested ULRs were consuming as well as producing information (Figure 4-44).

Figure 4-44. Replies : Read ratio for threads in Phase 1.0



To summarise, when addressing the question of what ULRs discussed in Phase 1.0 there was evidence to indicate ULRs utilised the community to share information to develop their role and to engage with topics of national interest (Figure 4-45).

Figure 4-45.Changing *Focus* of discussions for Phase 1.0 (2003-2010)



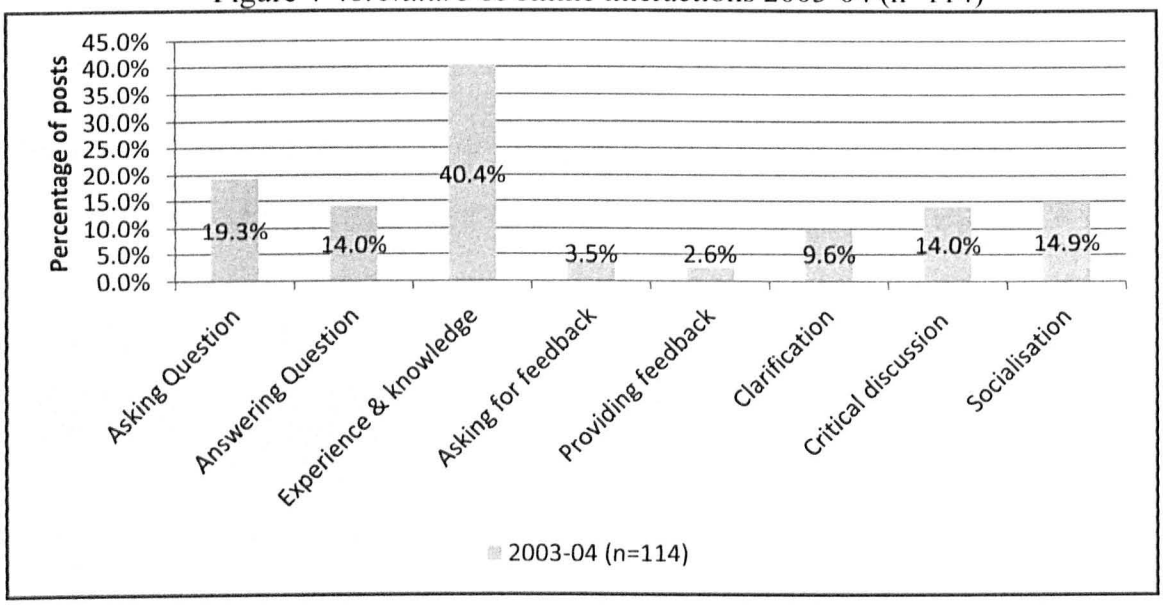
In 2005-06 there was an increase in topics focused on 'Developing the ULR role' consistent with a new initiative. During session 2006-07 there was an increase in posts related to discussing the 'ULR meetings (offline community)'. This added further evidence that there was cross over between the online and offline world. 'Socialisation' never appeared prominently as a focus of discussion even at the beginning of this community. For an emergent position within an established union the ULRs quickly engaged with

discussions surrounding issues of 'National policy and influence' stepping over 'Socialisation'.

4.8 PHASE 1.0– *NATURE* OF THE INTERACTIONS

Observations indicated Phase 1.0 had established a community with volunteer and staff Leaders and had established a purpose focused on 'Developing the ULR role' and discussing 'National policies and initiatives'. Having established the 'who' and 'what' the next stage involved describing the *nature* of the interactions that occurred (Figure 4-46).

Figure 4-46. *Nature* of online interactions 2003-04 (n=114)



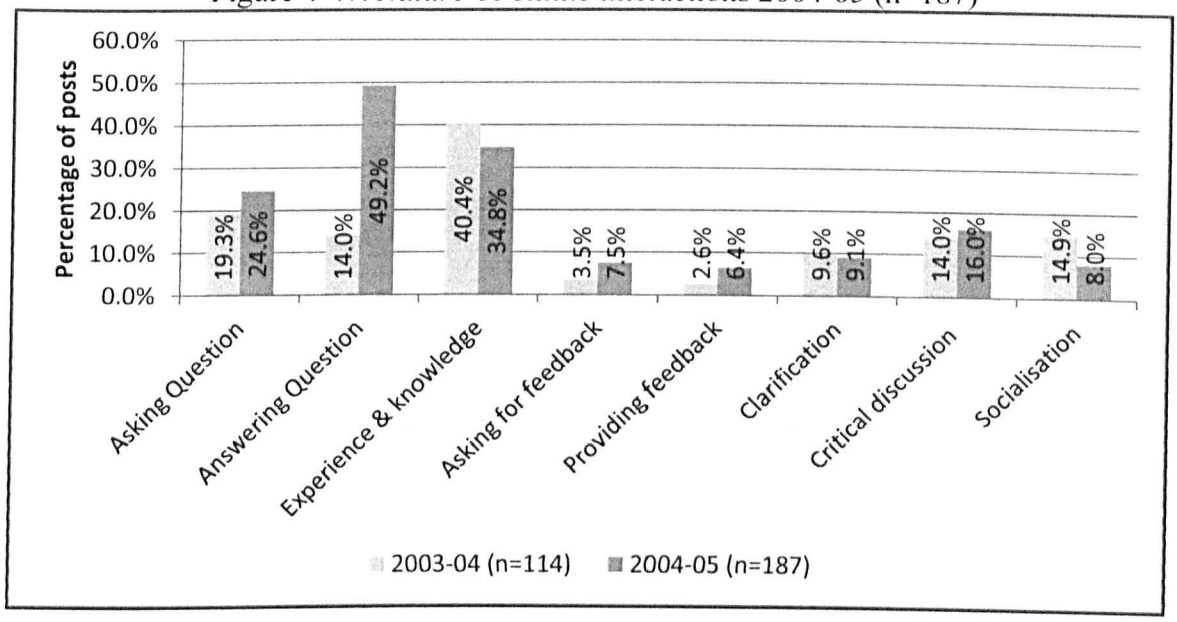
Analysis indicated ULRs were primarily focused on using the forum to share 'Experience and knowledge' (40.4%). This was closely followed by going online and 'Asking questions' (19.3%). More questions were 'Asked' (19.3%) than were directly 'Answered' (14.0%) suggesting not all queries were resolved. 14.0% of posts involved 'Critical discussion'. Critical discussion was lower than posts linked to 'Sharing experience and knowledge' (40.4%).

While 'Socialisation' was rarely been the sole focus of posts, 14.9% did contain an element of 'Socialisation' within them. This indicated evidence of the 'social glue' that holds a

community together. The analysis confirmed earlier findings that the purpose of the community was to develop professional practices associated with being a ULR.

A different pattern emerged for the following academic session **2004-05** (Figure 4-47).

Figure 4-47. *Nature* of online interactions 2004-05 (n=187)



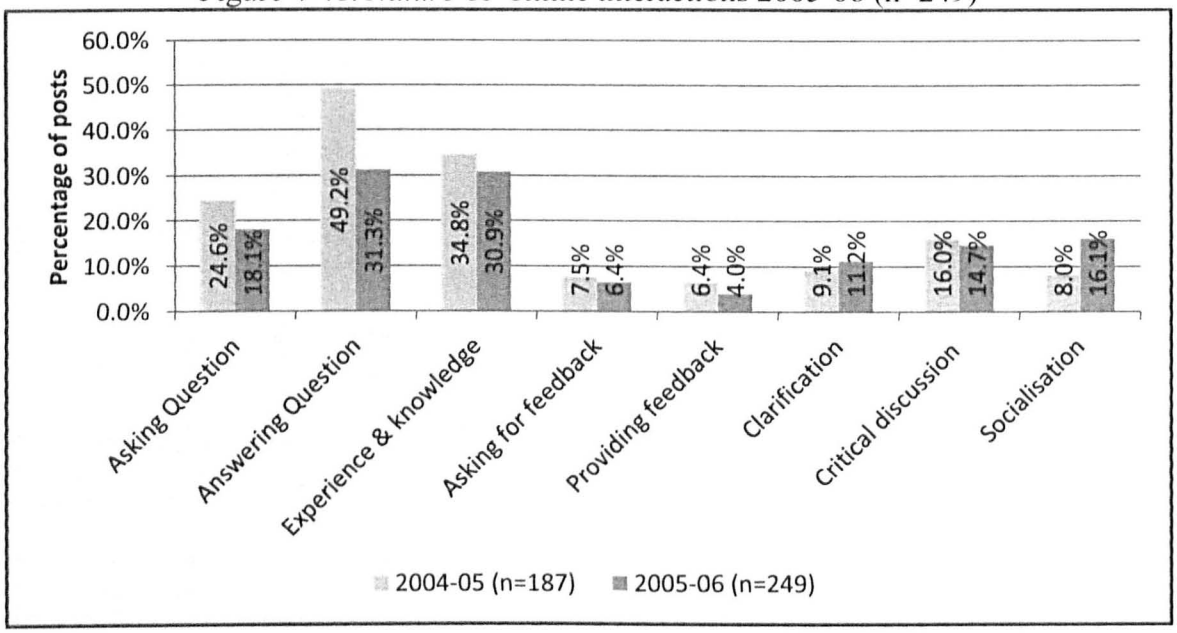
'Asking' and 'Answering' questions, looking for 'Feedback' and 'Critical discussion' all increased during this second year. Sharing 'Experience and knowledge', and 'Socialisation' decreased. Earlier analysis had indicated that the ULRs used Phase 1.0 on a need basis. The increase in asking and answering questions indicated there was such a need which translated into increased activity. Increased levels of 'Critical discussion', 'Asking questions' and 'Providing feedback' indicated that discussions involved more than simply looking for answers. ULRs were beginning to engage online in addition to transferring information.

For example, thread "***CT Dissertation Length***" started on the 11th November 2011 and ran until 11th January 2005. It contained 8 posts from 6 members. The post queries the different length of essays required to complete the project part of the Chartered Teacher Master's program with different providers. Throughout the thread there was evidence of sharing

experience and knowledge, looking for clarification, and critically analysing the root cause of the problem raised. This indicated evidence of critical engagement with ideas and each other. Looking holistically at the year it was characterised by professional collaboration.

2005-06 was characterised by an increased in the number of threads, but a decrease in their duration. Analysis of posts indicated this changed the *nature* of the interactions (Figure 4-48).

Figure 4-48. *Nature* of online interactions 2005-06 (n=249)



There was a decrease in posts related to all categories except 'Clarification' and 'Socialisation'. This suggested that during this year there were fewer in-depth discussions of professional practice. Instead analysis of the post content indicated the forum was being used to exchange information as opposed to critical discuss (as illustrated by the example thread below Figure 4-49). The thread contained 3 posts in which a question was asked and then answered, with little elaboration or discussion.

Figure 4-49. Example of short thread from (2005-06)

Topic	Author	Replies	Read	Last Post
Schools aslearning centers?	*ULR57*	2	50	**01/09/2005** 15:19:15 by: *Moderator 1*

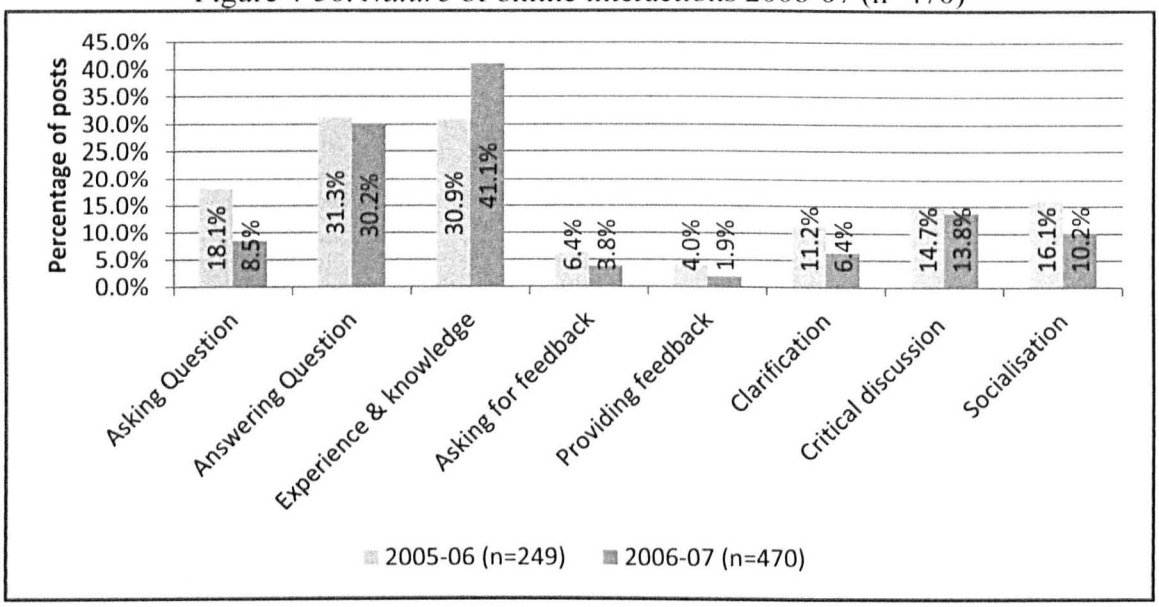
Content of the Thread

ULR57	Posted - 30/08/2005 : 11:18:30 When attending the council CPD team meeting, the subject of paying for training/meeting rooms came up? We have a resource center which has in the past provided the space for meeting and seminars. For things like inservice work shops. I belive in the past this was free to education staffs but there is a move I think, now to take these to the meeting rooms in schools. With a tariff. Has anyone else come across this in their region. Kind Regards *ULR 57*
ULR 78	Posted - 30/08/2005 : 20:49:35 Not heard anything like that but wouldn't be surprised by anything with PFI.
Moderator 1	Posted - 01/09/2005 : 15:19:15 This is one to watch and a consequence of PPP/PFI. I would be interested to know if this is happening elsewhere.

Content analysis indicated that the reason for this change was due to a change in group dynamics. There was increased number of passive ULRs. Earlier evidence had established the group operated on a need basis. A number of the passive ULRs were more experienced and had established their role. Consequently they did not need to go online. The newer ULRs who had joined the community lacked the knowledge and experience to respond. Consequently critical discussion and professional collaboration stopped while the new group gained knowledge and confidence. The forum focused on information exchange.

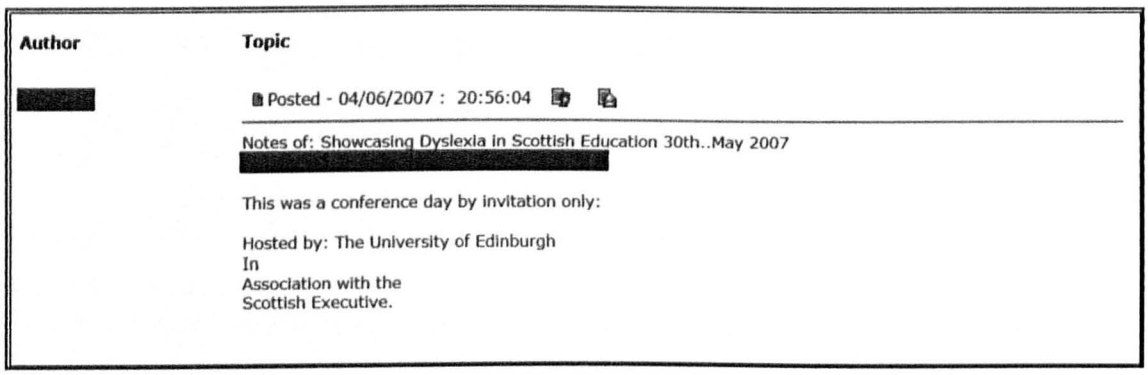
2006-07 was the most active year of Phase 1.0 in terms of number of members and posts (Figure 4-50).

Figure 4-50. *Nature* of online interactions 2006-07 (n=470)



There was evidence of an increase in posts related to ULRs 'Sharing experience and knowledge'. However, there was a decrease in posts that 'Asked questions', looked for and provided 'Feedback' and 'Clarification' and 'Socialisation'. During this session previously passive ULRs came back into the community. Content analysis of the posts indicated some more experienced ULRs were keen to share their experiences with Novice members (Figure 4-51).

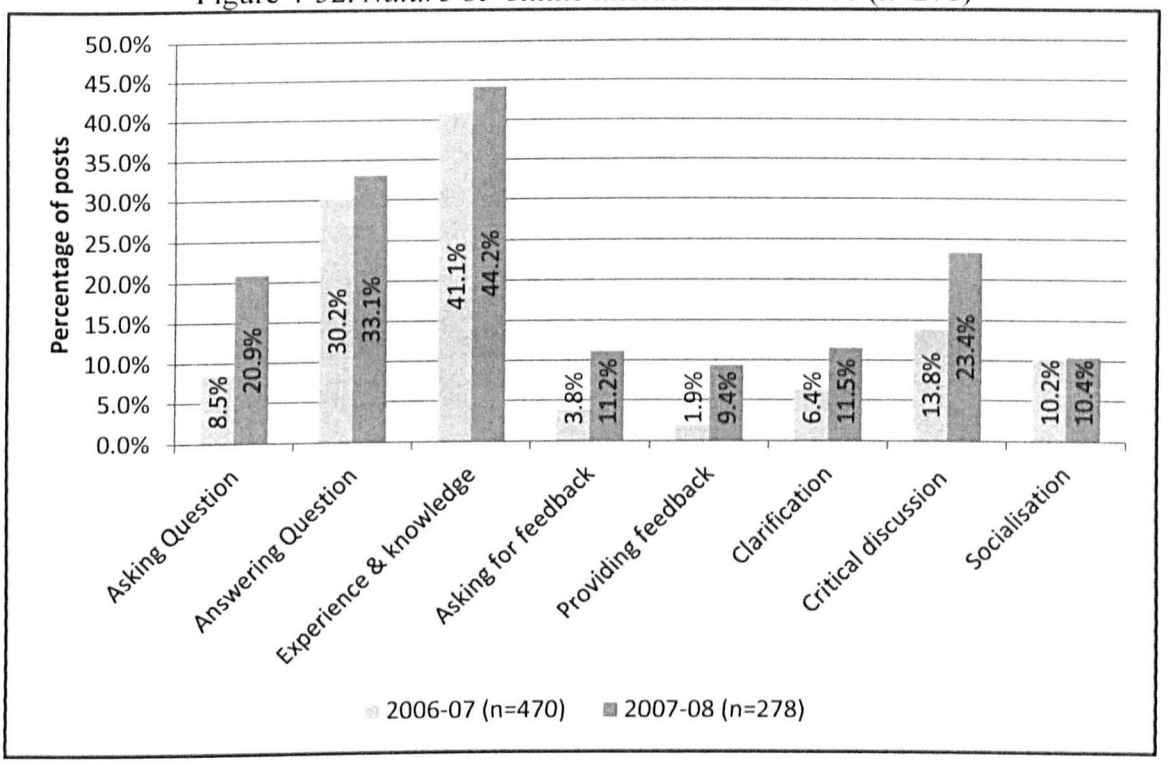
Figure 4-51. Returning ULRs sharing offline experinces online 2006-07



This suggested for this academic session there was a focus on information exchange in order to develop professional practices.

The following session **2007-08** marked the beginning of the decline of Phase 1.0 (Figure 4-52).

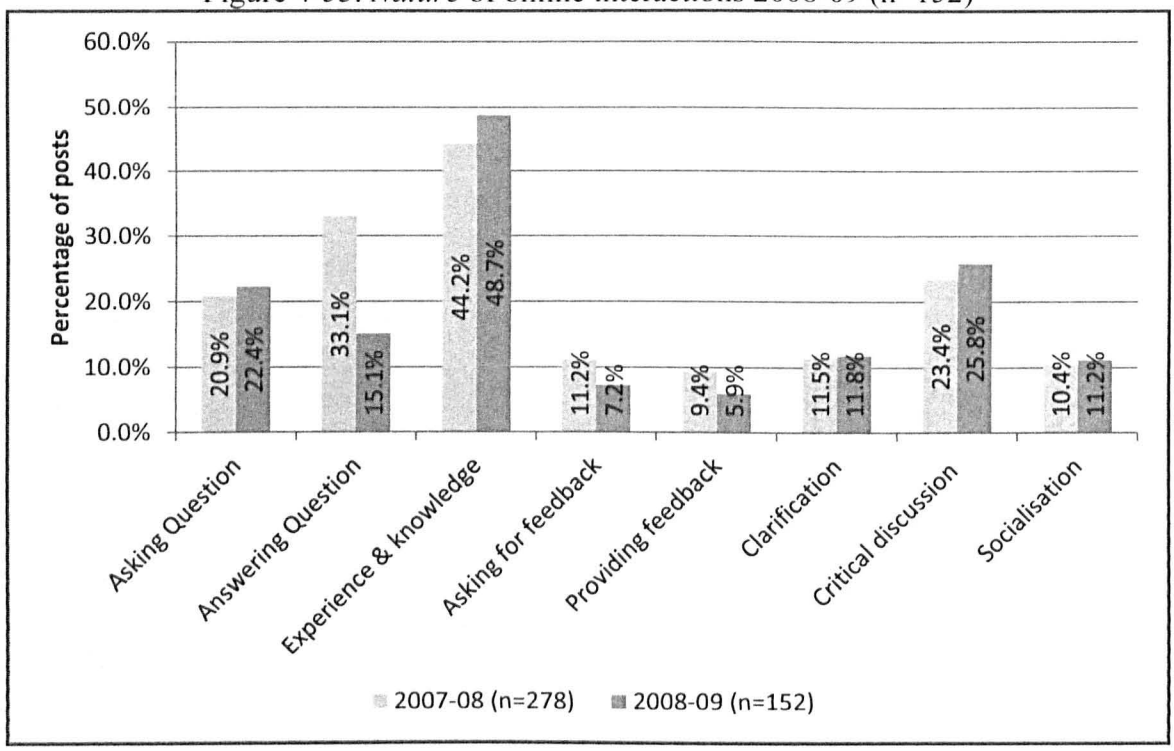
Figure 4-52. *Nature* of online interactions 2007-08 (n=278)



'Asking and answering questions' increased from the previous year but so had 'Asking for feedback', 'Clarification' and 'Critical discussion'. This suggested a possible paradox in that when more experienced ULRs left the forum, the quantity of discussion decreased but the level of interaction increased. Threads were longer and there was more evidence of critical discussion seen in 2004-05. Certainly there was evidence to suggest at this point Phase 1.0 was back operating as a forum for professional collaboration to develop ULR practices. The ULRs who had returned during the previous session had left again so this indicated this change was due to newer members gaining confidence online.

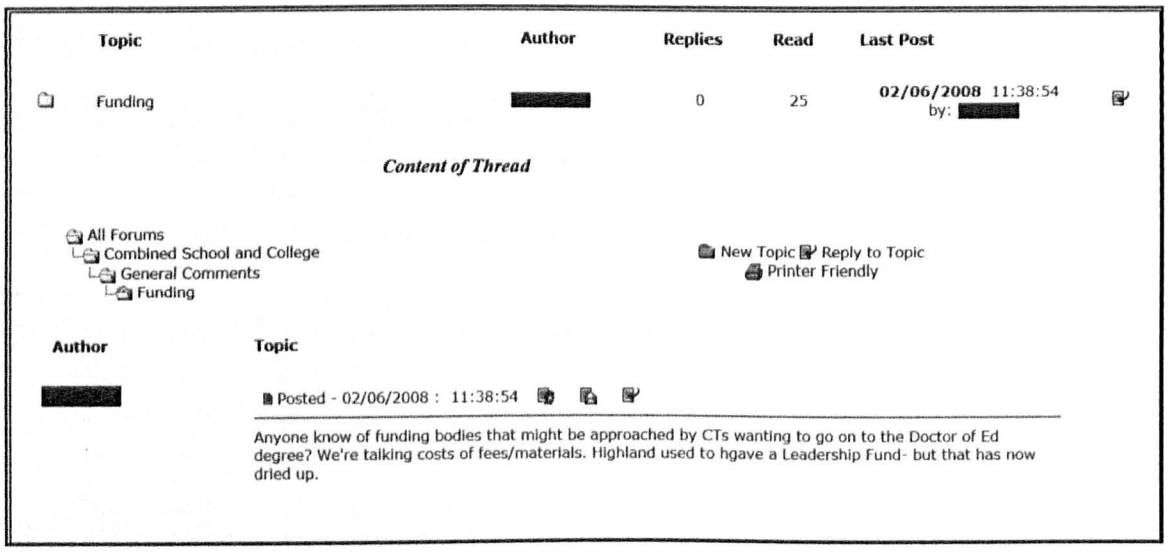
2008-09 was the last full session for Phase 1.0 (Figure 4-53).

Figure 4-53. *Nature* of online interactions 2008-09 (n=152)



What stood out was that while those posts that 'Ask questions' went up those that 'Answered questions' went down (Figure 4-54). This suggested that ULRs were looking for answers online but not necessarily getting them.

Figure 4-54. Example of online question left unanswered 2008-09

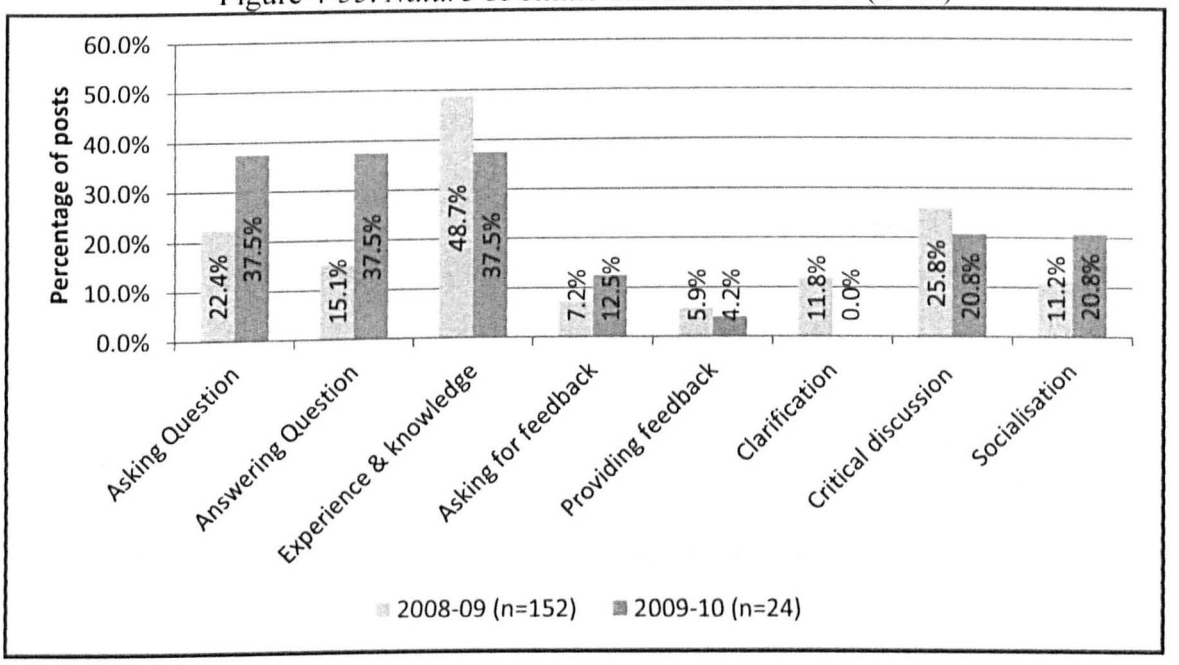


There were 18 single-post threads out of 152. This provided further evidence of decline after the initial loss of membership at the start of this session. If questions were posted but

not answered this may have triggered further ULRs to leave as the forum no longer served a purpose. The post was read by 25 ULRs suggesting those that read it were not able to respond.

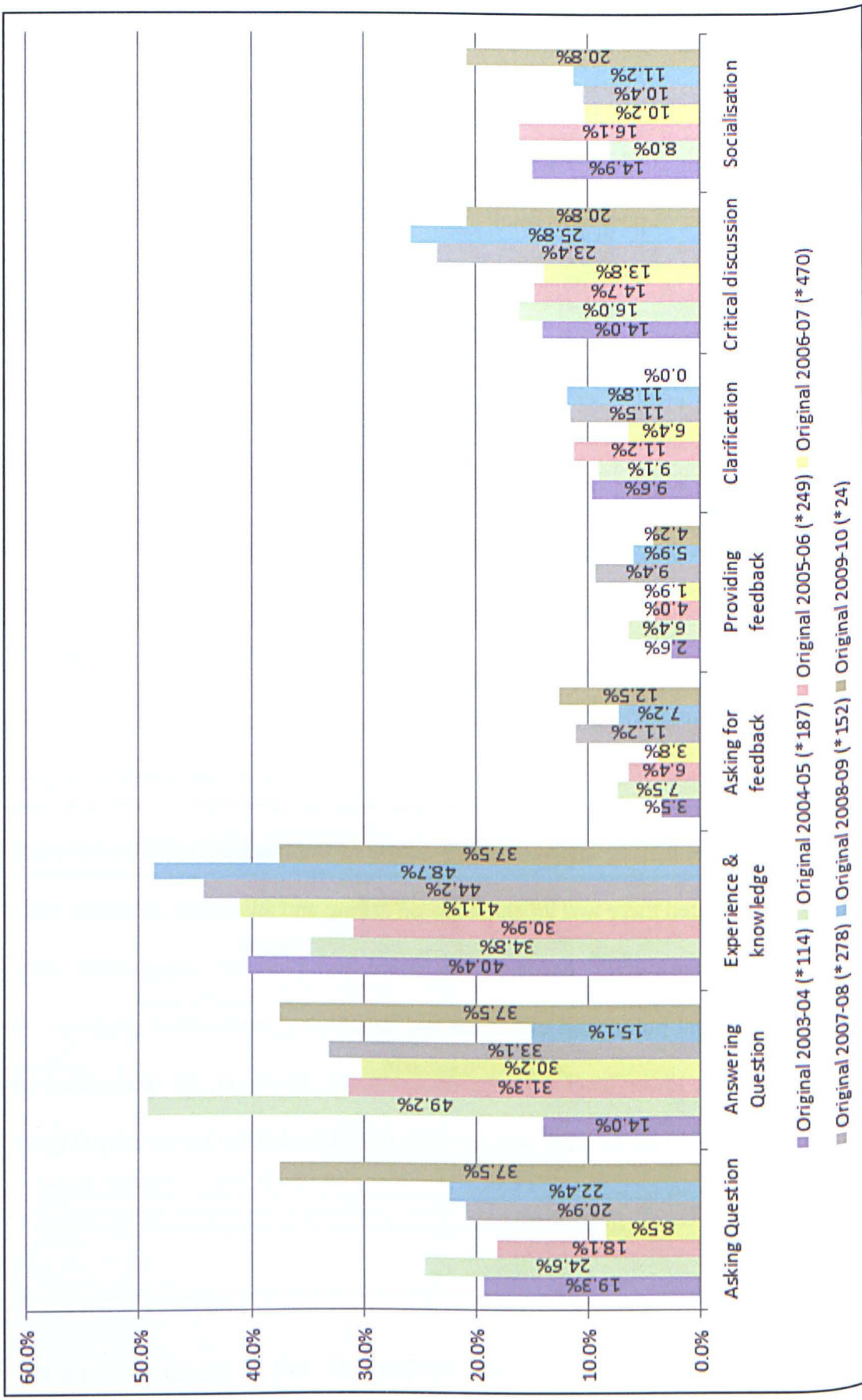
Session 2009-10 Phase 1.0 only lasted from August until November. Consequently the number of posts was small and was only included for illustrative purposes (Figure 4-55).

Figure 4-55. *Nature* of online discussion 2009-10 (n=24)



To summarise, analysis of the *nature* of the interactions that took place during Phase 1.0 indicated there was an emphasis on asking and answering questions and sharing experience and knowledge. Evidence suggested some critical engagement with issues related to national policy and initiatives and developing professional practices. The default position was a lower level information exchange. However, all discussions occurred on a need basis. When the need was not there the ULRs left the community (Figure 4-56).

Figure 4-56. Overview of *Nature* of online Interactions Phase 1.0 2003-2010



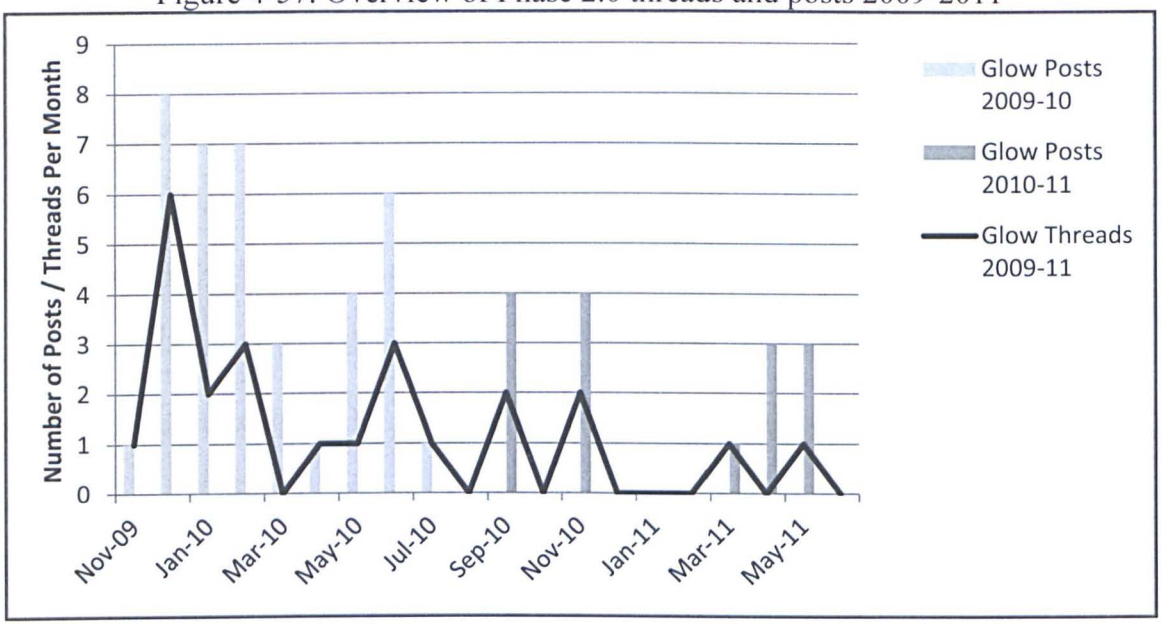
4.9 SUMMARY OF PHASE 1.0

Phase 1.0 was an online forum created to provide a platform that allowed ULRs to exchange ideas and share resources with a view to developing their role. The community began in 2003-04 with 20 active members. One volunteer ULR and staff member quickly established themselves as Leaders. This was then followed by a period of increased activity and numbers of members (including Leaders). 2006-07 marked a peak in terms of number of posts, threads and members who participated in discussions. 2007-08 began a period marked by less members participating; Leaders moved to Elder positions and contributed less. Previously Active ULRs stopped posting. Content analysis of posts indicated that the purpose of Phase 1.0 was to provide a forum for members to discuss the 'Developing role of the ULR' and 'National policies and initiatives' directly related to this role. Phase 1.0 operated on a need basis with members choosing to opt in and out as required. The forum fluctuated from the primary purpose of exchanging information to professional collaboration. 'Socialisation' was rarely the sole purpose for engagement but was evidenced throughout.

4.10 PHASE 2.0 - ACTIVITY LEVELS

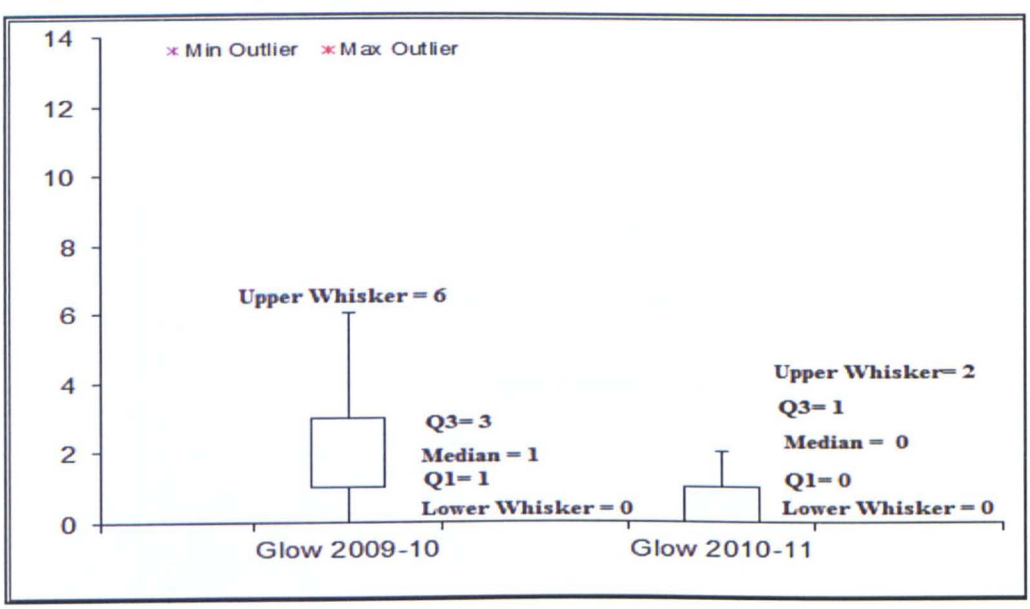
In November 2009 the community migrated to Phase 2.0, Glow Group. Activity levels from November 2009 until June 2011 are shown below (Figure 4-57).

Figure 4-57. Overview of Phase 2.0 threads and posts 2009-2011



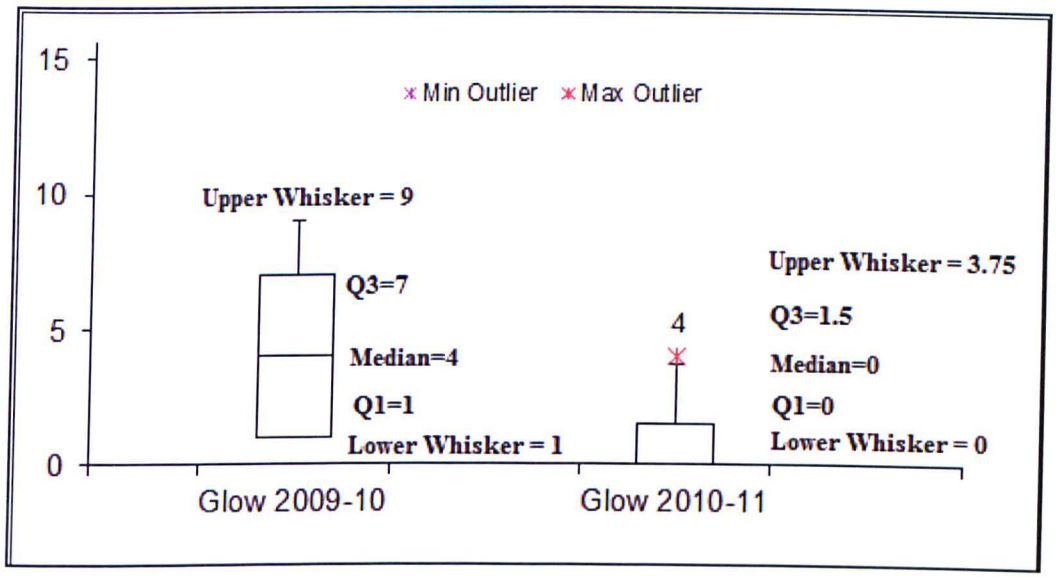
Following the transition to Phase 2.0 engagement levels decreased, there were 8 months when no threads were started and 5 months with no postings. A box plot analysis of the number of threads per academic year showed a similar pattern of decline (Figure 4-58).

Figure 4-58. Box plot analysis of Phase 2.0 Glow forum threads 2009-2011



The median value for number of threads started per month during each academic year followed the same pattern as the range. The lower quartile figure (Q1) value decreased from 1 in 2009-10 to 0 in 2010-11. The upper quartile figure (Q3) value decreased from 3 in 2009-10 to 1 in 2010-11. A similar pattern was seen for a box plot analysis of posts (Figure 4-59).

Figure 4-59. Box plot analysis of Phase 2.0 Glow forum posts 2009-2011

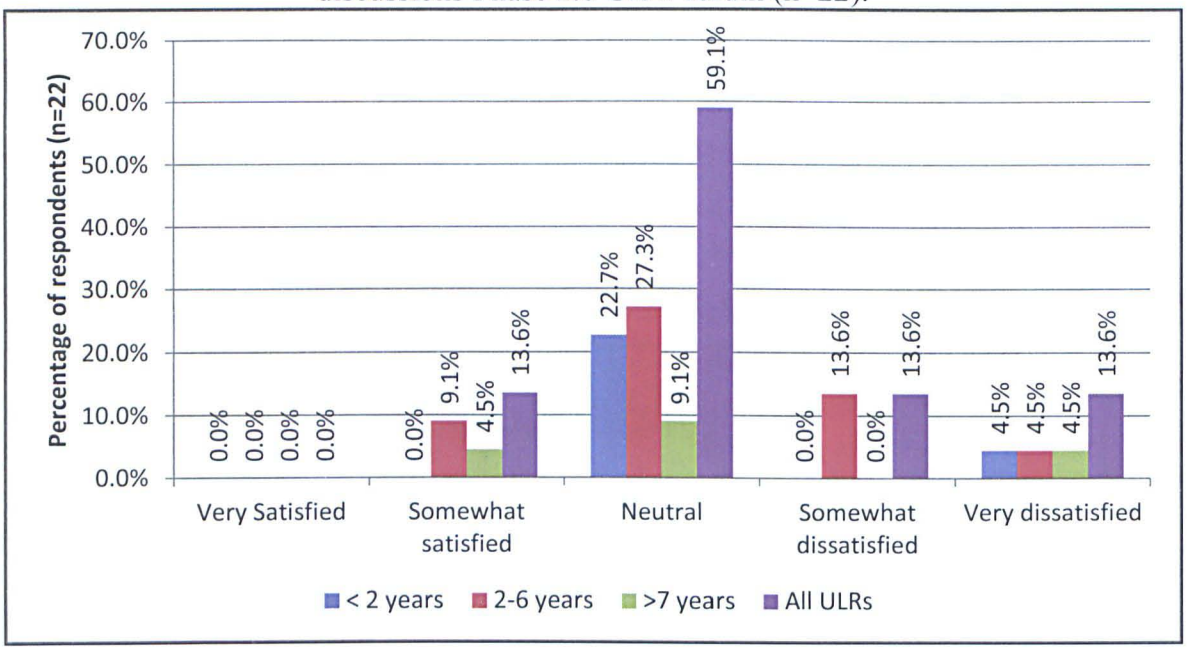


Box plot analysis supported the pattern seen in Figure 4-57 that Phase 2.0 underwent a period of decline before it closed in June 2011. The critical question was why.

As part of the case study ULRs were asked to complete an online questionnaire in February 2011 to report their satisfaction with various aspects of Phase 2.0. At this point they were using this technology. All of the questionnaire participants had experienced Phase 1.0 and Phase 2.0. Aspects investigated included 'Overall Satisfaction' through to 'Ease of Navigation' with responses ranging from 'Strongly satisfied' (5) through to 'Strongly dissatisfied' (1).

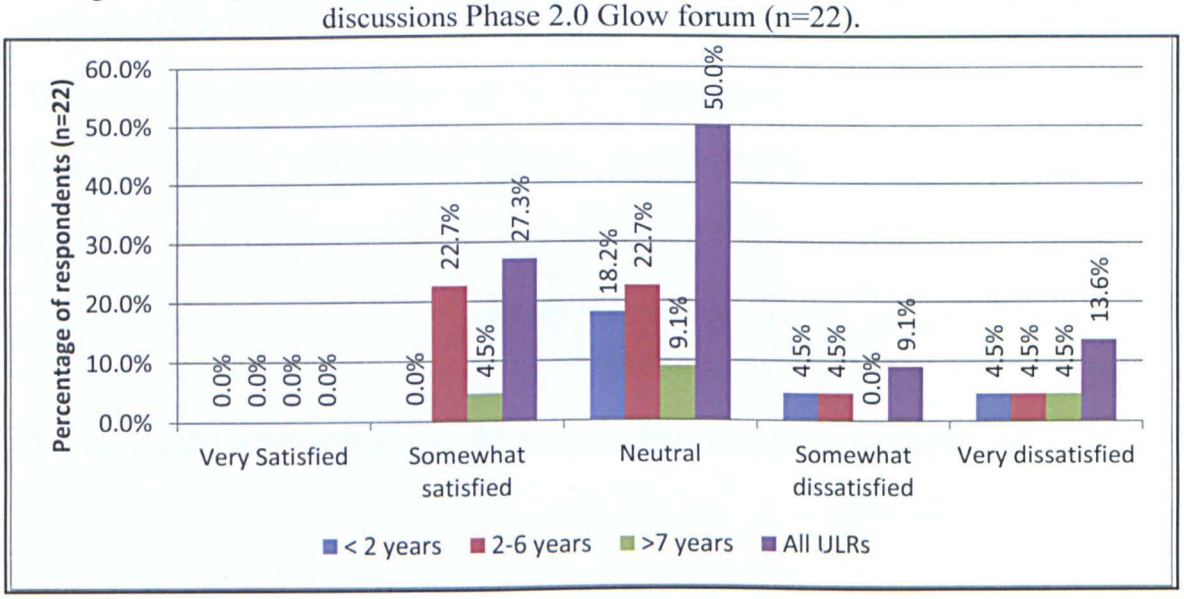
As the **quantity of discussions** was lower than for Phase 1.0, this was a critical area of investigation (Figure 4-60).

Figure 4-60. Question: Please rate your satisfaction with the following areas - Quantity of discussions Phase 2.0 Glow forum (n=22).



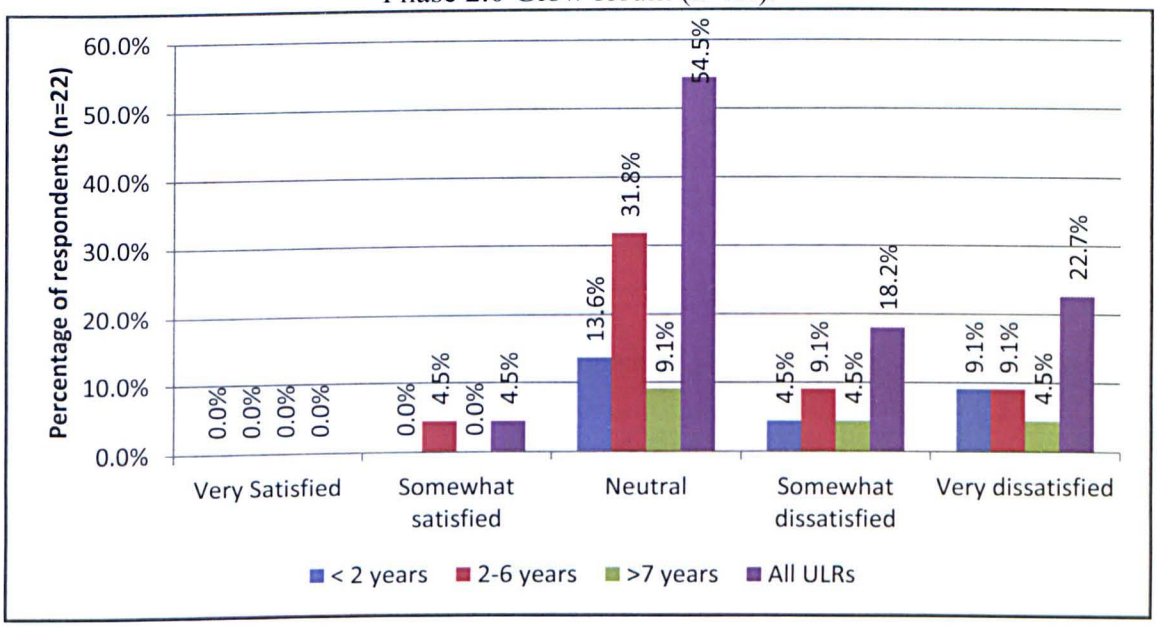
Responses indicated a 'neutral-dissatisfaction' skew. A Kruskal-Wallis test was performed to determine if there were differences in satisfaction with quantity of discussions between lengths of service groups. Median satisfaction scores remained the same across all length of service groups at 3.0. This equated to 'neutral' response. There were no statistically significant differences between the length of service groups indicating responses were not influenced by length of attachment (Appendix 21). ULRs were also asked to report on their satisfaction with the **quality of discussion** in Phase 2.0 (Figure 4-61).

Figure 4-61. Question: Please rate your satisfaction with the following areas - Quality of discussions Phase 2.0 Glow forum (n=22).



There was a 'neutral-satisfied skew' to the responses indicating ULRs were more satisfied with the quality of discussion as opposed to quantity. A Kruskal-Wallis test was performed to determine if there were differences in satisfaction with quality of discussions between lengths of service groups. Once again median satisfaction scores remained the same across all length of service groups at 3.0. This equated to 'neutral' response. (Appendix 21). ULRs were then asked to consider their overall satisfaction with the Phase 2.0 (Figure 4-62).

Figure 4-62. Question: Please rate your satisfaction with the following areas - Overall Satisfaction Phase 2.0 Glow forum (n=22).

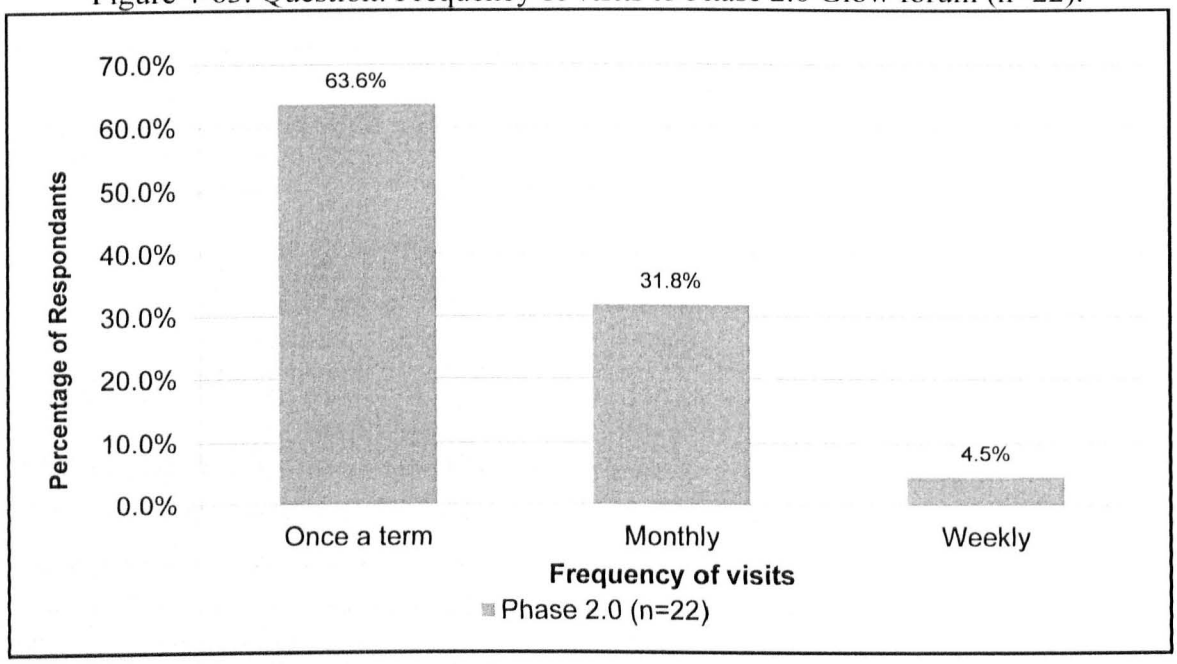


There was a 'neutral-dissatisfaction' skew to the responses. A Kruskal-Wallis test was run to determine if there were differences in overall satisfaction score between length of service groups. Overall median satisfaction scores for ULRs with less than 2 years' service were 2.5. This increased to 3.0 for 2-6 years' service before they decreased to 2.5 with greater than seven year service. However, the differences were not statistically significant indicating length of service did not impact on overall satisfaction with Phase 2.0.

The next step in the investigation was to determine if reported overall satisfaction level corresponded with **frequency of visits** as reported by the ULRs (Figure 4-63).

Observations of Phase 2.0 posts showed low activity levels. One explanation was that these two phenomenon were linked. Low activity led to decreased satisfaction which led to decreased visits.

Figure 4-63. Question: Frequency of visits to Phase 2.0 Glow forum (n=22).



The only ULR to be 'somewhat satisfied' only visited Phase 2.0 once a month. Surprisingly ULRs who were 'somewhat dissatisfied' (9.1%) or 'dissatisfied' (13.6%) reported visiting the site weekly. This suggested a willingness to try. A Kruskal-Wallis test was run to determine if there were differences in frequency of visit score between overall satisfaction groups. Overall satisfaction scores decreased with increasing frequency of visits. Median scores were 3.0 for those visiting termly and monthly decreasing to 2.5 for those who visited weekly. However, the differences were not statistically significant. They did suggest that ULRs who used Phase 2.0 more frequently were more dissatisfied which would explain its decline and then death.

The picture that emerged indicated a feeling of frustration towards Phase 2.0. To explore this in more detail ULRs were interviewed in February 2012 to investigate their feelings towards Phase 2.0. They were candid about not going online:

> Well I must admit I don't really have a problem with Glow. And I can get into Glow no bother. Except I find it a nuisance to go into. So I tend to access Glow on occasions rather than use it all the time.
>
> (Interview with ULR)

This was expanded to explain why Glow was a 'nuisance':

> it tends to run very slow on our intranet. That may have changed recently because I did, I did notice it was a bit quicker the last couple of times I've been in. But I am guilty because . . . I'm guilty of not using it more.
>
> (Interview with ULR)

Other technical issues were raised, including logging on and system:

> I have also found Glow to be a problem with logging on and getting on to it. It's never been straightforward. It's never worked as slickly as I thought and I think that's been part of the demise of Glow. Although those that work in it say that it's wonderful my own experience of that is No. And I think for many colleagues who have tried to use Glow who haven't found it the tool they thought it to be. So to that extent I have stopped using Glow.
>
> (Interview with ULR)

Collectively these technical difficulties appear to have jaded perceptions regarding how useful Phase 2.0 could be as a tool for ULRs to develop their professional practice and contributed to its decline in use.

However, these technical difficulties were superseded by issues of privacy. At the May 2011 ULR meeting developing the Phase 2.0 online group was placed on the agenda. During the course of a demonstration it came to light that members of LTS (now Education Scotland) had access to the group. This was a revelation. While everyone had known LTS hosted Phase 2.0, perhaps naively nobody had realised this meant they could access the group. ULRs had assumed their discussions were private. Many ULRs were unhappy with this situation. The quote below epitomises their concerns:

> I am e-mailing this to all the LRs individually and to see what they have to say because we do not have a **private** forum any more to discuss the implications of our work.
>
> ULR email

They also voiced the first request that Phase 2.0 be closed and moved back to EIS control:

> I am very disturbed that all this has gone on without my being aware of it. Our Glow forum was originally meant to be private but obviously could not be as the GLOW administrators see it too. I assume other LRs were unaware of this move to give access willy nilly and now I have no other way to ask for your views other than mass e-mailing. We need our closed EIS noticeboard back
>
> ULR email

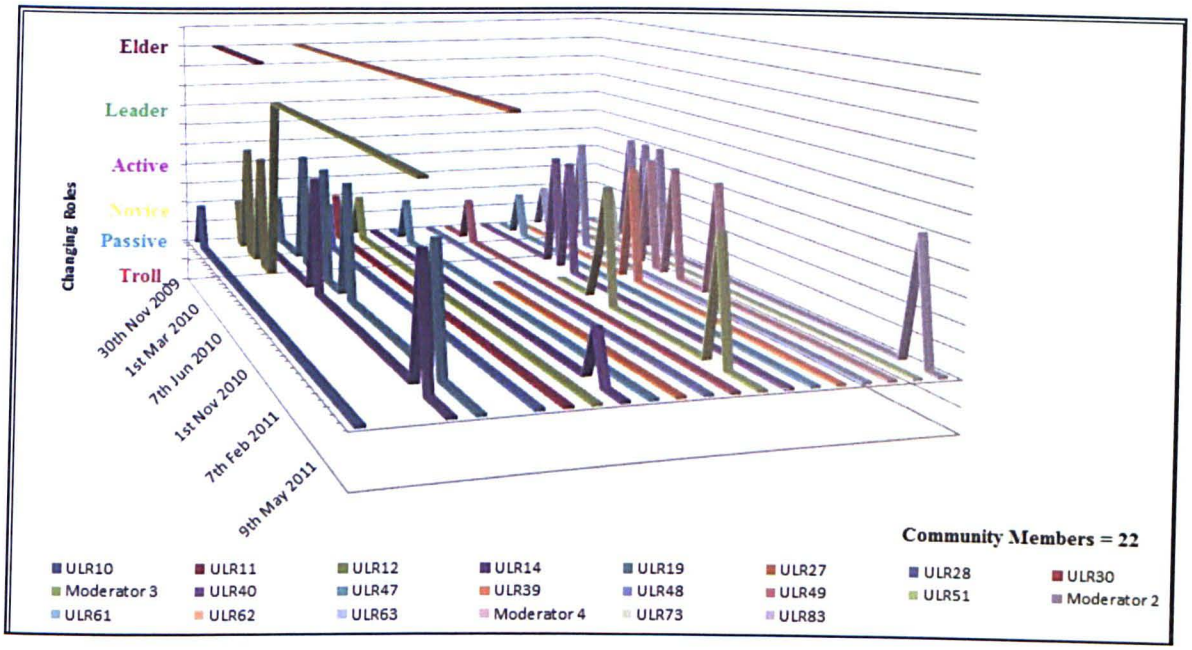
This meeting prompted the start of Phase 3.0 as collectively ULRs moved offline. The Glow Group was still accessible but following the May 2011 meeting no one was willing to do use it. As the Phase 1.0 forum had been locked, the ULRs had no access to a private discussion forum. Email became the only form of online communication.

The next stage in the analytical framework was to investigate the extent to which these difficulties had impacted on the establishment of community roles.

4.11 PHASE 2.0 – COMMUNITY ROLES

Before the transition to Phase 2.0 there had been a decline in online membership and a Leader vacuum. As was previously stated Kim (2000) argues the early establishment of Leaders is essential for the success of an online community. It was important to determine if this continued or if a new community was established in Phase 2.0 (Figure 4-64).

Figure 4-64. Changing member roles 2009-2011 (n=22).

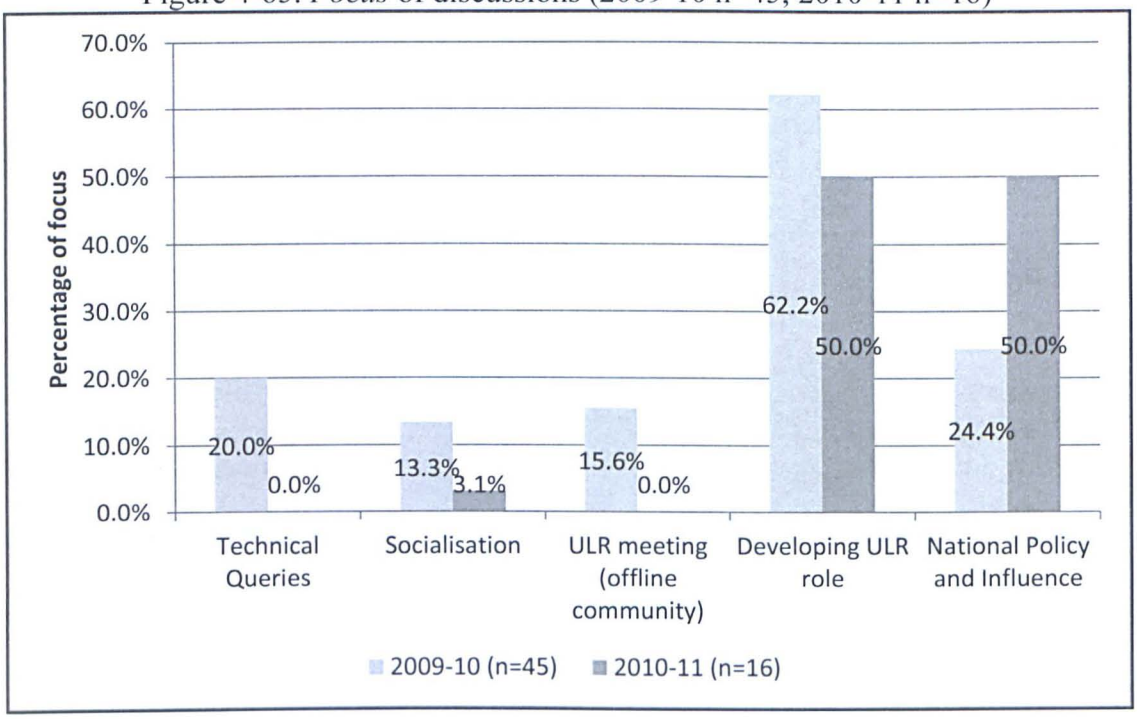


2 Elders transitioned to Glow. However, ULR11 left the EIS in May 2010. Elders ULR74 and ULR38 did not access Phase 2.0. ULR12, who joined the ULR community in 2006-07, progressed to Leader status during Phase 1.0. This was a role progression as ULR12 had not held Leader status during Phase 1.0. Moderator 2 no longer had responsibility for the community as this had been transferred to Moderator 4 (a new member of EIS staff). However, Moderator 4's activity levels and the nature of posts did not meet the Leader criteria. In Phase 1.0 Leaders had been distributed between staff and ULRs but now there was only one volunteer ULR who met the criteria for being a Leader. The number of members whose activity was consistent with a fluctuation between an Active role and a Passive role was 22. While the number was small it was higher than the initial cohort who started Phase 1.0 back in 2003-04. Looking holistically at the group suggests that one of the reason Phase 2.0 failed was it lacked initial Leadership and direction and lost the commitment of its participants over time, in part at least due to inadequacies of the technology.

4.12 PHASE 2.0 – *FOCUS* OF DISCUSSIONS

The next step in the analysis was to look at the *focus* of discussions for Phase 2.0 (Figure 4-65).

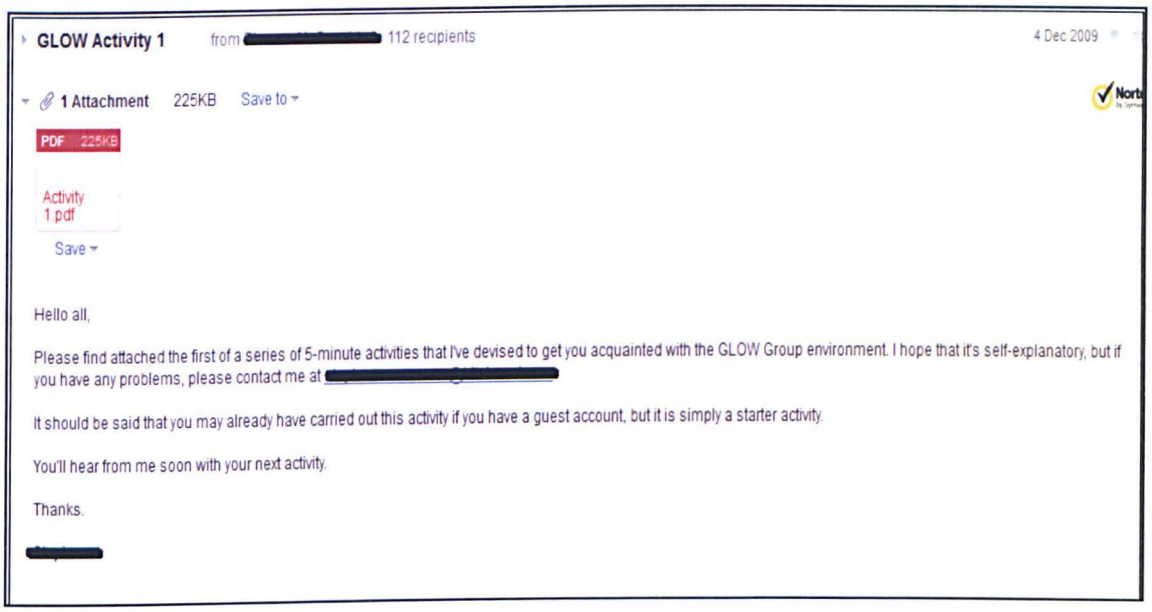
Figure 4-65. *Focus* of discussions (2009-10 n=45, 2010-11 n=16)



A new *focus* category was introduced, technical queries. 20.0% of posts were technical queries, namely '*how do I do x in Glow*'. As no ULR sought online technical advice during Phase 1.0 it was felt this warranted inclusion. Looking at 2009-10 the established categories of 'Socialisation', 'ULR meetings', 'Developing the ULR role' and 'National policy' continued. A similar pattern was seen for 2010-11 with the exception that no reference was made to 'ULR meetings' and 'Socialisation' dropped to 0.1%.

During Phase 1.0 it was primarily Moderator 2 (staff Leader) who initiated welcome posts etc. or those related to offline meetings. In Phase 2.0 Moderator 4 did not continue this. However, in response to low activity levels Moderator 4 did initiate starter activities in 2009-10. The starter activities were distributed via email a month after Phase 2.0 started. They included ice-breakers designed to encourage ULRs to go online and post on Phase 2.0 (Figure 4-66).

Figure 4-66. Phase 2.0 Starter Activities



5 ULRs responded to the first starter activity. But in terms of e-moderation two things were noticeable. First, Moderator 4 did not start a discrete area on Phase 2.0 for ULRs to respond to this email. It was left to ULRs to start one. Second, Moderator 4 did not respond to any of the posts made by the ULRs. This suggested that while the intention was to stimulate discussion within Phase 2.0 lack of effective moderation resulted in low levels of engagement. Phase 1.0 had grown without starter activities as the ULRs had a purpose to go online. Such a purpose seemed lacking in Phase 2.0

One of the promoted benefits of Glow was the opportunity for ULRs to engage in synchronous discussion through the Glow Meet facility. It was envisaged this would allow ULRs to have focused synchronous discussions. A Glow meet was arranged but was unsuccessful as the technology failed (Figure 4-67).

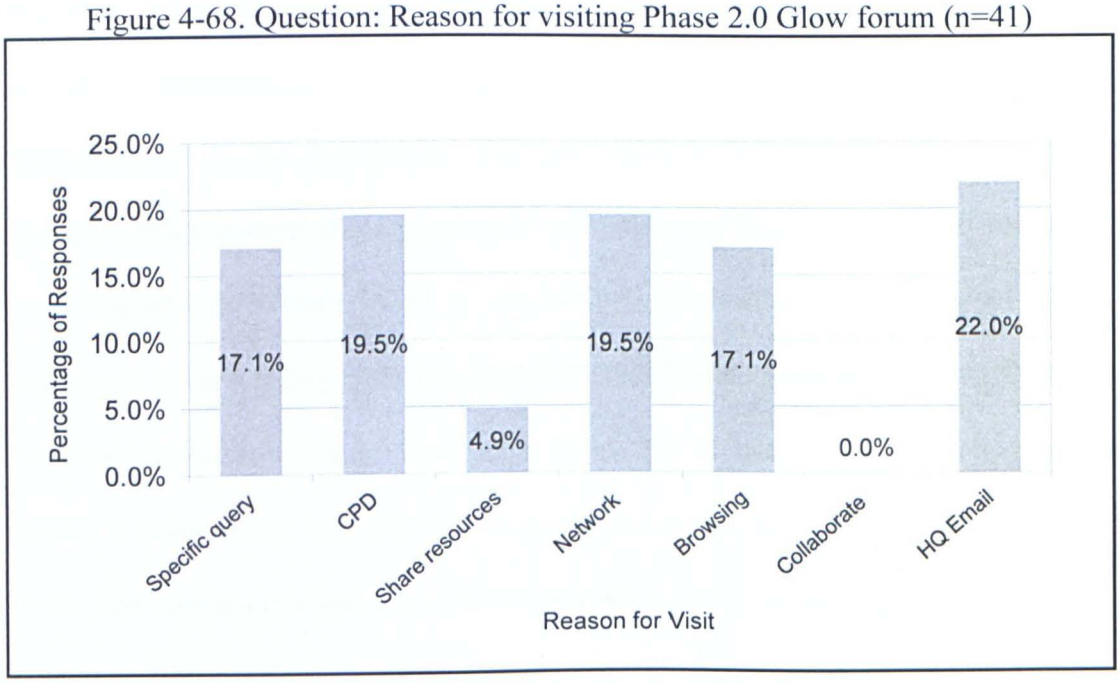
Figure 4-67. First attempt at online synchronous discussions through Glow meet

LR Glow meet 15/06/10 Hm, I see one person is still meeting. After about a dozen goes, Marrakech is open, but steadfastly off line. The window tells me I have left the discussion, but I was never in. Ah well. The cheese and wine was good. [redacted] has gone home. [redacted]	0	ULR 12	15/06/2010 22:11
LR Glow meet 15/06/10 [redacted] and I, a lovely cheeses board and some nice wine are interested to note thast on;ly one person appears to have arrived at the glow meet. Marratech trying to download for the 8th time. Using a mac - not advised this was not ok.	2	ULR12	15/06/2010 21:33
LR Glow meet 15/06/10 Macs are okay, but use Mozilla Firefox as a browser or Internet Explorer, not Safari	0	Moderator 4	15/06/2010 21:48
LR Glow meet 15/06/10 My phone number is [redacted]	0	Moderator 4	15/06/2010 21:58

This issue of access and technical difficulties of advertised functionality is one that has dogged Glow since its inception. The question that remained was the impact these difficulties had on the *nature* of the interactions that took place.

In order to establish what ULRs felt was the purpose of Phase 2.0 they were asked to consider the **reason for visit** and if Phase 2.0 was **fit for this purpose** (Figure 4-68).

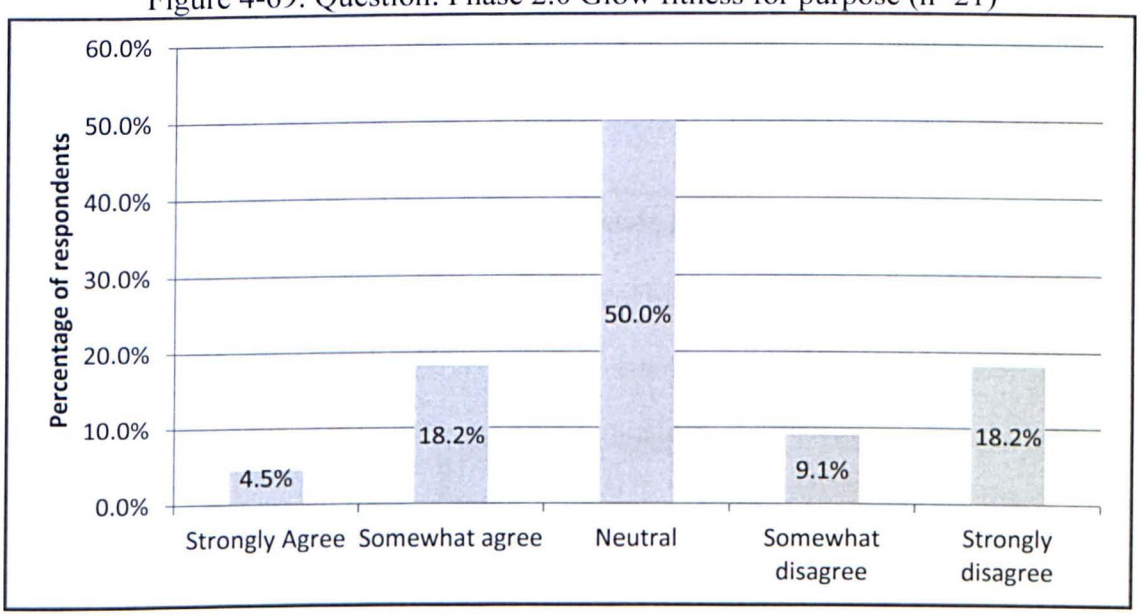
Figure 4-68. Question: Reason for visiting Phase 2.0 Glow forum (n=41)



At 22.0% the most popular reason to visit Phase 2.0 was following an email from EIS headquarters. This contrasted with the 5.9% for Phase 1.0. This suggested ULRs needed more prompting than for Phase 1.0. The least cited reason was to collaborate (0.0%). This contrasted with the 3.9% for Phase 1.0. This was surprising given collaboration was an advertised selling point of Glow. The only purpose to visit Phase 2.0 that scored higher than Phase 1.0 was CPD. 19.5% of ULRs visited Phase 2.0 for CPD as opposed to 11.8% for Phase 1.0. However, content analysis of the posts suggested that this CPD related to the ULRs learning about Glow itself as opposed to using it as a tool.

ULRs were then asked to consider if Phase 2.0 was **Fit for purpose** (Figure 4-69).

Figure 4-69. Question: Phase 2.0 Glow fitness for purpose (n=21)

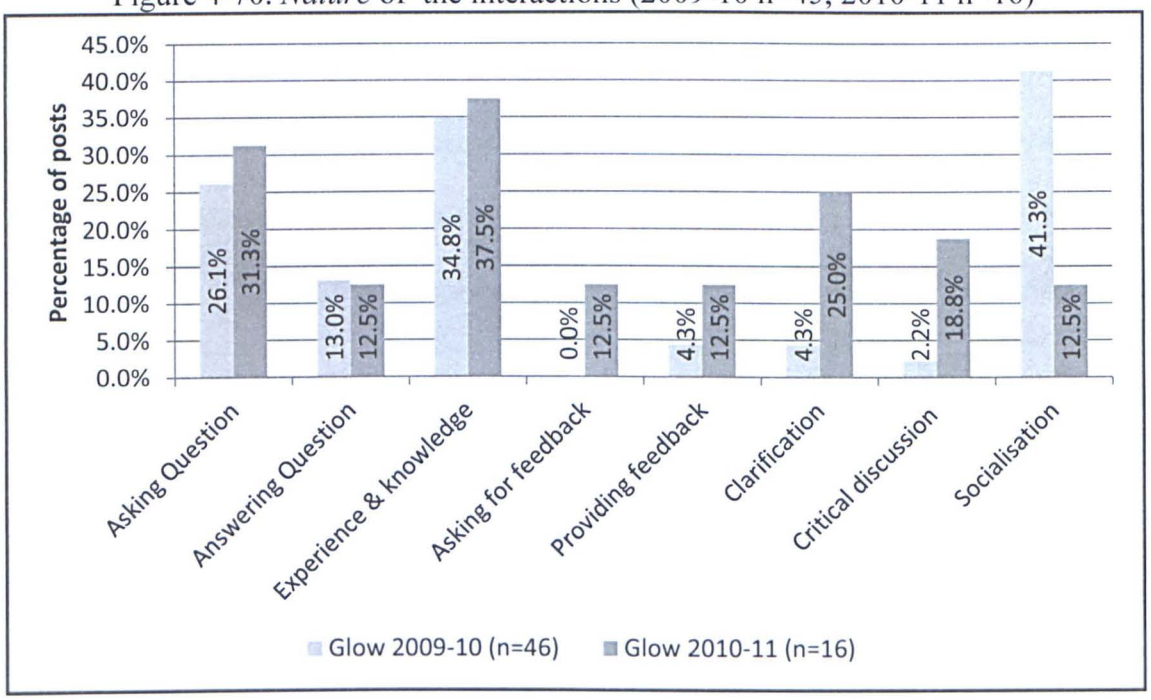


Once again there was a 'neutral-disagree' skew. The median response for Phase 2.0 in relation to fitness for purpose was 'Neutral' (3.0). This suggested that the ULRs were ambivalent towards if Phase 2.0 was indeed fit for purpose. This underlined the general feeling of lack of engagement that pervaded Phase 2.0.

4.13 PHASE 2.0 – *NATURE* OF THE INTERACTIONS

Looking at the *nature* of the interactions that took place during Phase 2.0 there was a similar pattern to Phase 1.0 (Figure 4-70).

Figure 4-70. *Nature* of the interactions (2009-10 n=45, 2010-11 n=16)



During 2009-10 there was still an emphasis on 'asking' and 'answering questions' and 'sharing experience and knowledge'. However, rather than this being questions about ULR practices they were about Glow itself. This indicated ULRs were more concerned with learning how to use Glow as opposed to using it as a tool to facilitate their role. 'Critical discussion' decreased in 2009-10 in comparison with Phase 1.0. This indicated the nature of discussion during Phase 2.0 centred on information exchange. Caution was applied to the data for 2010-11 as there were only 16 posts. What the data did confirm was that by the end of 2010-11 the Phase 2.0 online community died.

4.14 SUMMARY OF PHASE 2.0

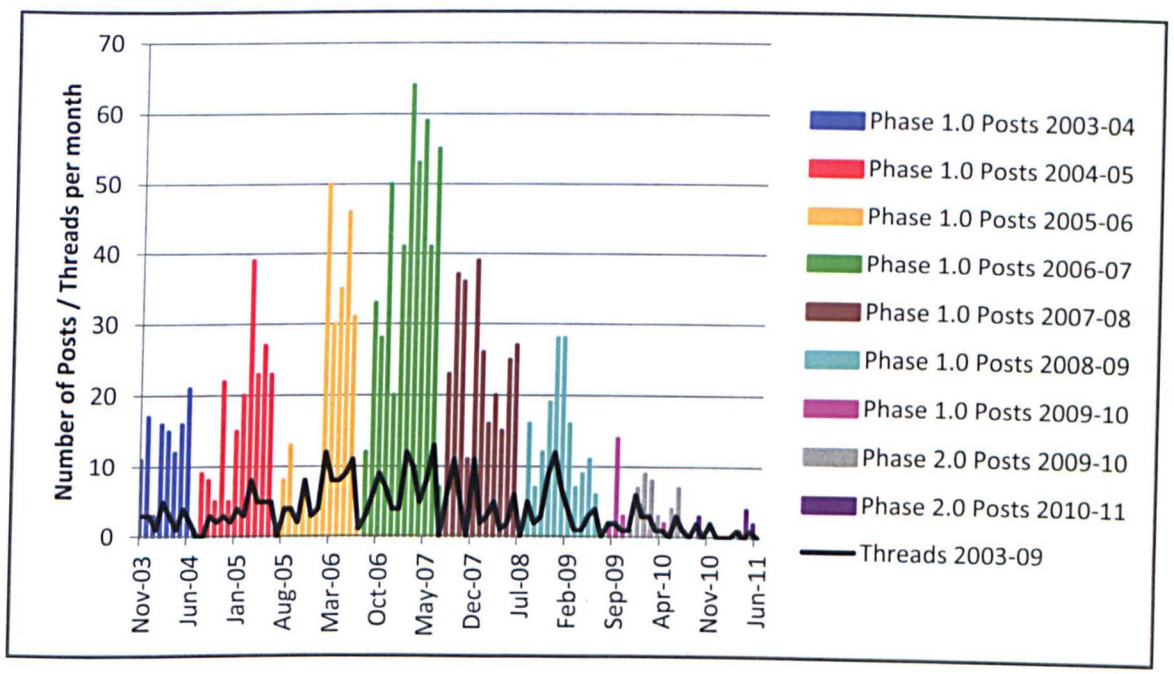
Phase 2.0 was an online forum created to provide an improved platform that would allow ULRs to continue to exchange ideas and share resources. The reality was that learning how to use the technology took precedent. Following a drop in online membership at the end of

Phase 1.0 (2009-10) there was an increase in the numbers of ULRs who transitioned to Glow. One ULR progressed to fill the Leader vacuum that was seen at the end of Phase 1.0. However, the EIS official who acted as the Moderator did not progress to a Leader role within this new community leaving it essentially self-directed. Analysis of the Phase 2.0 activity levels indicated that rather than experience growth the group declined in activity. The *focus* of the topics discussed were broadly the same as in Phase 1.0, although the *focus* of technical difficulties was introduced as a number of posts asked for help with Glow. The *nature* of the discussions that occurred were less critical and more focused on e information exchange. By the end of June 2011 the online group died.

4.15 COMPARISON OF PHASE 1.0 AND PHASE 2.0

Comparing the activity level of the two Phases in terms of number of posts and threads it was clear that Phase 1.0 was more active than Phase 2.0 (Figure 4-71).

Figure 4-71. Comparison of Phase 1.0 and Phase 2.0 posts and threads 2003 – 2011



Comparing **Member roles** Phase 1.0 had a higher community membership ranging from 20-69. Phase 2.0 had 22 members. In terms of Leadership, Phase 1.0 included 8 Leaders (7 volunteer ULRs and 1 staff) compared with Phase 2.0 which only had one volunteer ULR.

The ***focus* of discussions** was broadly the same. However, Phase 2.0 saw the introduction of topics focused on solving Glow technical queries. The ***nature* of the interactions** during Phase 1.0 tended to be more critical and involve more collaboration than Phase 2.0 which concentrated on sharing information, often of a technical nature regarding how to use Glow.

Additionally, statistical analysis of the February 2011 questionnaire corroborated observations. ULRs were more satisfied with the **quantity of discussions, overall satisfaction, ease of navigation** and **fitness for purpose** during Phase 1.0 than Phase 2.0. They reported they were more likely to visit Phase 1.0 than Phase 2.0 (Appendix 22). The results are summarised below (Table 4-7).

Table 4-7. Summary of case study questionnaire findings (n=22)

Measure	More Satisfaction Phase 1.0	Equal Satisfaction	More Satisfaction Phase 2.0	Wilcoxon signed-rank test	Statistically Significant	Implications
Quantity of Discussion	10	10	2	$Z = -2.389$, two-tailed $p = 0.017$	Yes	ULRs were more satisfied with the quantity of discussion on the Phase 1.0 than Phase 2.0.
Quality of Discussions	9	10	3	$Z = -1.768$, two-tailed $p = 0.077$	No	There was no statistical difference in levels of satisfaction with the quality of the discussions between the two forums.
Ease of Navigation	16	3	3	$Z = -3.137$, two-tailed $p = 0.002$	Yes	ULRs were more satisfied with the ease of navigation on the Phase 1.0 than Phase 2.0.
Overall Satisfaction	13	8	1	$Z = -3.131$, two-tailed $p = 0.002$	Yes	ULRs were more satisfied with the Phase 1.0 than Phase 2.0.
Fitness for purpose	13	7	2	$Z = -2.914$, two-tailed $p = 0.002$	Yes	ULRs were more in agreement that the Phase 1.0 was fit for purpose in comparison with Phase 2.0.
Frequency of visits	13	8	1	$Z = -3.170$, two-tailed $p = 0.002$	Yes	ULRs were more likely to visit the Phase 1.0 more frequently than Phase 2.0.

Qualitative differences between Phase 1.0 and Phase 2.0 can be summarised as:

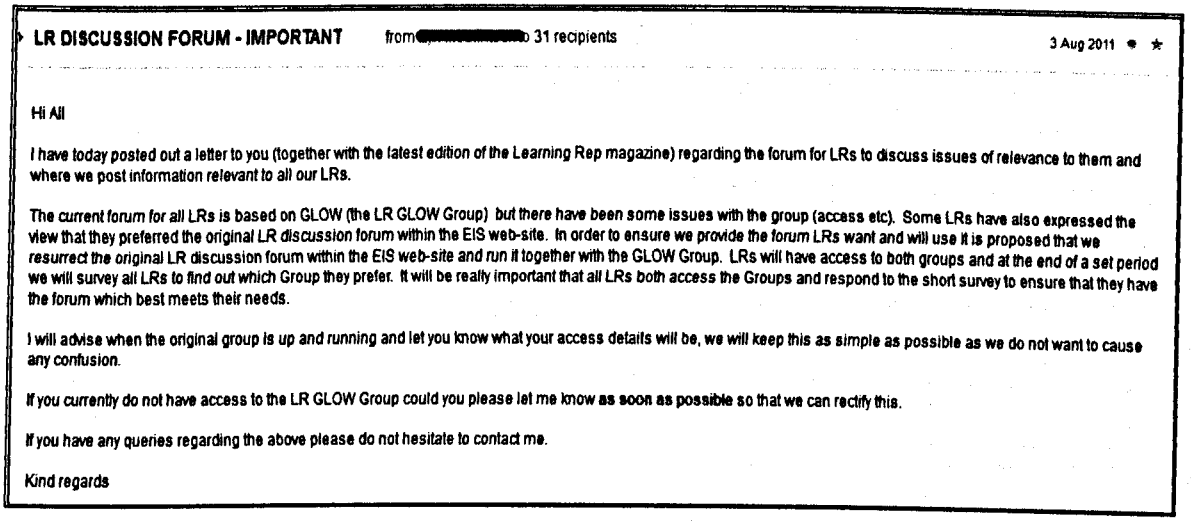
- Ownership – the ULRs felt ownership of Phase 1.0 partly because it was hosted on the EIS webpage and was part of the wider union.
- Technical barriers – ULRs could not easily access the Phase 2.0 Glow Group. When they could access the forum it was difficult to navigate through the web pages.

- Privacy – once the ULRs discovered Phase 2.0 was not private they abandoned the online community.

4.16 PHASE 3.0 OFFLINE

As was previously mentioned at the May 2011 ULR meeting it was discovered the Phase 2.0 Glow Group was not private. LTS could access the discussions. In August 2011 the EIS decided the Original Forum (from Phase 1.0) would be resurrected and run consecutively with the Glow Group (from Phase 2.0) for a trial period so the ULRs could decide which platform to adopt (Figure 4-72).

Figure 4-72. ULRs formal notification of online trial between Glow and web hosted forum



LR DISCUSSION FORUM - IMPORTANT from [redacted] to 31 recipients 3 Aug 2011

Hi All

I have today posted out a letter to you (together with the latest edition of the Learning Rep magazine) regarding the forum for LRs to discuss issues of relevance to them and where we post information relevant to all our LRs.

The current forum for all LRs is based on GLOW (the LR GLOW Group) but there have been some issues with the group (access etc). Some LRs have also expressed the view that they preferred the original LR discussion forum within the EIS web-site. In order to ensure we provide the forum LRs want and will use it is proposed that we resurrect the original LR discussion forum within the EIS web-site and run it together with the GLOW Group. LRs will have access to both groups and at the end of a set period we will survey all LRs to find out which Group they prefer. It will be really important that all LRs both access the Groups and respond to the short survey to ensure that they have the forum which best meets their needs.

I will advise when the original group is up and running and let you know what your access details will be, we will keep this as simple as possible as we do not want to cause any confusion.

If you currently do not have access to the LR GLOW Group could you please let me know as soon as possible so that we can rectify this.

If you have any queries regarding the above please do not hesitate to contact me.

Kind regards

However, workload issues resulting from the November 2011 strike delayed the trial. In March 2012 ULRs were informed that the New EIS forum and Glow Group would run consecutively for a trial period followed by a ballot to decide the preferred platform (Figure 4-73).

Figure 4-73. Formal announcement of start of online trial between Glow and web hosted forum

LR Discussion Forums from [redacted] to 31 recipients 21 Mar 2012

Hi All

I am writing to advise that the LR discussion forum on the EIS web-site will be open from **tomorrow (Thursday).** The forum can be accessed from the EIS web-site by clicking on the Learn Rep icon on the front page, then clicking on the LR forum link at the top of the next page.

Your login and password for the LR forum will be the same: initial and surname. I have accessed the forum on behalf of all the LRs and can confirm that this is working! However, if you do experience any difficulties let me know and we will resolve these immediately.

In terms of who has access to the forum, only Louise and I will have this - this is so that we can put up information, check posts in case we need to respond to any of these etc. Thomas McNally, our IT expert, will also have access but this will only be to resolve any technical issues.

I will be emailing you all individually confirming your log in details and also giving some other information.

The LR Glow Group is also up and running and you were contacted not long ago asking you to confirm your login information and that you had access to the Group. If you find that you cannot get into the LR Glow Group will you please let me know and we will resolve this as soon as possible. I would remind the new LRs who have just qualified that anyone who has not yet returned the Glow access forms should do so as soon as they can so that we can arrange access to the Group for all of you.

The same information will be placed on both forums and at the end of a period of time we will be asking you which forum you prefer - this will then be the on-line discussion forum for all LRs.

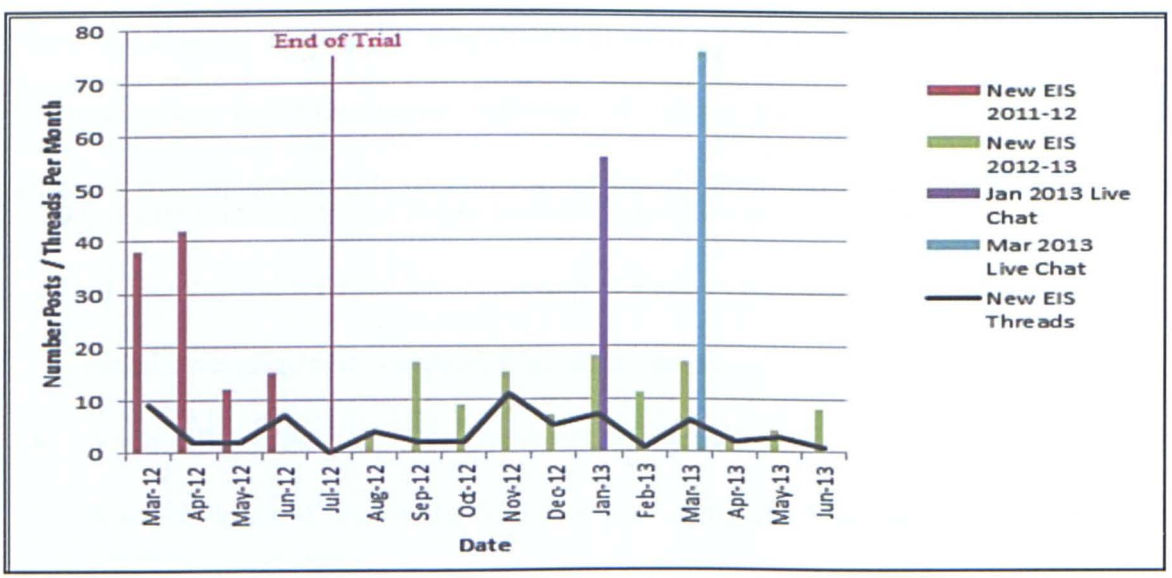
If you have any queries please do not hesitate to contact me.

This trial marked the beginning of Phase 4.0.

4.17 PHASE 4.0- ACTIVITY LEVELS

Phase 4.0 began in March 2012 with a move back to the EIS hosted site. Offline the ULR community discussion focused on the introduction of Professional Update and the Donaldson Review of Teacher Education in Scotland (2010). There was an increase in new ULRs and for the first time student ULRs were invited to the offline (physical) meetings. In order to establish a baseline description of the online community a quantitative analysis of the number and length of threads and the number of posts was undertaken (Figure 4-74).

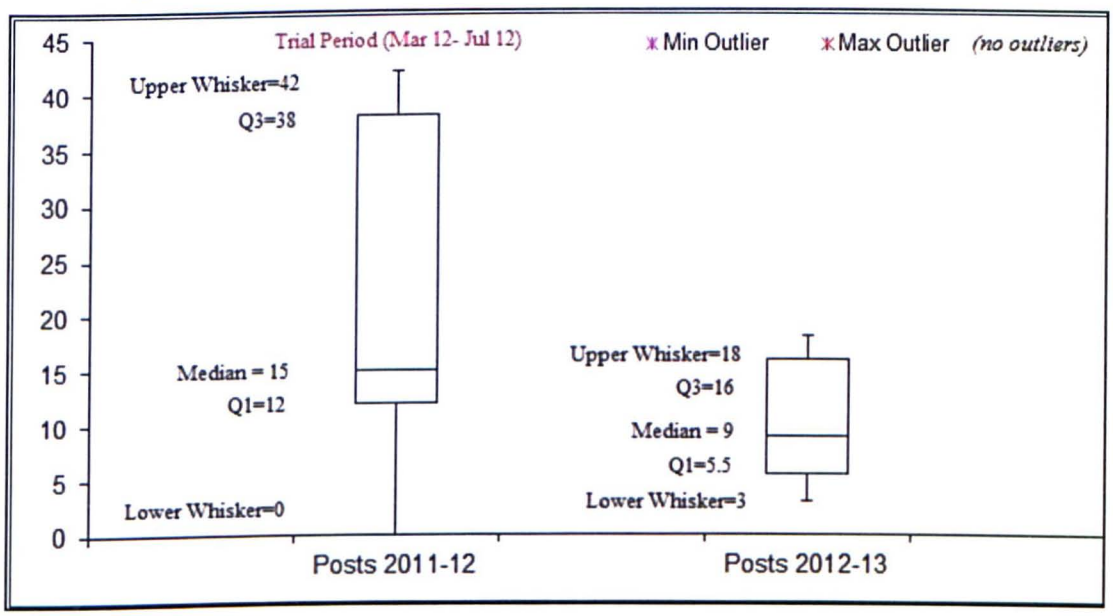
Figure 4-74. Overview of Phase 4.0 threads and posts 2012-2013



During the March 2012 – June 2012 trial period no one posted in the Glow Group. This included the Moderator with the remit of overseeing the group. This suggested there was no value in comparing the Glow Group and the New EIS forum. Instead Phase 4.0 focused solely on investigating the New EIS forum.

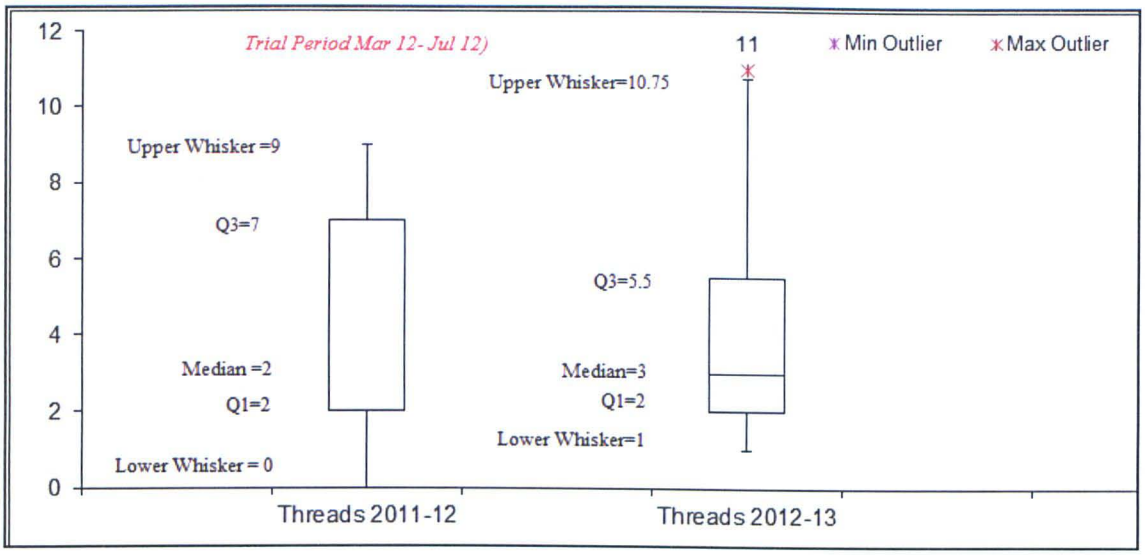
There was an initial spike that correlated with the start of the trial before activity dropped in May and June. As was usual for the community there was no activity during the July summer holidays. A box plot analysis of the threads and posts in each academic year was plotted to compare the distribution from one academic year to the next (Figure 4-75 and Figure 4-76).

Figure 4-75. Box plot analysis of Phase 4.0 forum threads 2011-2013



The range of number of threads started per month decreased from 26 in 2011-12 to 12.5 in 2012-13. The median value for number of threads started per month followed the same pattern as the range. Lower quartile values (Q1) decreased from 12 in 2011-12 to 5.5 in 2012-13. Upper quartile values (Q3) decreased from 38 in 2011-12 to 16. All of this data supported the view that Phase 4.0 saw an initial flurry of activity when it restarted before it decreased. A similar pattern was seen for the number of posts (Figure 4-76).

Figure 4-76. Box plot analysis of Phase 4.0 forum posts 2011-2013.



In September 2012 a second questionnaire was undertaken which asked the ULRs to state their preferred technology. They were asked the following four questions:

1. How many times had the accessed the New EIS group in the last six months?
2. How many times had they accessed the Glow Group in the last six months?
3. Which forum they wished to have as their permanent forum?
4. An option to provide additional comments.

Twenty eight ULRs responded.

Question One.

All respondents indicated they had accessed the New EIS forum in the last six months. This number correlated with the number of ULRs observed to post online during the trial.

Question Two.

Four ULRs said that they had logged into the Glow Group (from Phase 2). However, observations indicated they did not post. One ULR stated: "*logged on to try but could not access it*".

Question Three.

All respondents stated a preference for the forum to be hosted on the EIS website. A section was made available for ULRs to make open-ended comments in relation to this question. The comments were coded for focus based on categories that emerged from the data (Table 4-8).

Table 4-8. End of Phase 4.0 trial questionnaire comments

Open-ended Comments.	**Focus**
"The LRs are a function of the EIS and not a function of GLOW. . . We are all EIS reps and should all log in to the parent site as a matter of course during the week therefore it is the only logical place in my opinion".	**In sight**
"As well as accessing the LR forum, you are on the site you can keep up to date with EIS news and events". "EIS website – the website is the one which offers all EIS related information as well as LR information". "EIS website forum as you can look up other EIS information while you are there. I find it easy to access the EIS one from home. Not everywhere has good access to GLOW".	**National policy and influence**
"I would only use the EIS site and I know that GLOW is not secure. I had this confirmed . . . I could not therefore accept using GLOW for trade union duties when it could be viewed by management". ". . and was not private to learning reps and EIS people only. Many other had access to the GLOW forum and comments could not be guaranteed confidentiality" "Sadly, because of the switch to GLOW, I got out of the habit of logging in regularly due to the difficulties which occurred and because of the lack of exclusivity. "	**Security**
"Would prefer the forum on the EIS website to be the permanent one as it is easier to access and there are no technical problems. Not confident or familiar with GLOW". "I was unhappy with the Glow group because it was hit or miss if I got in, was not user friendly".	**Technical Issues**

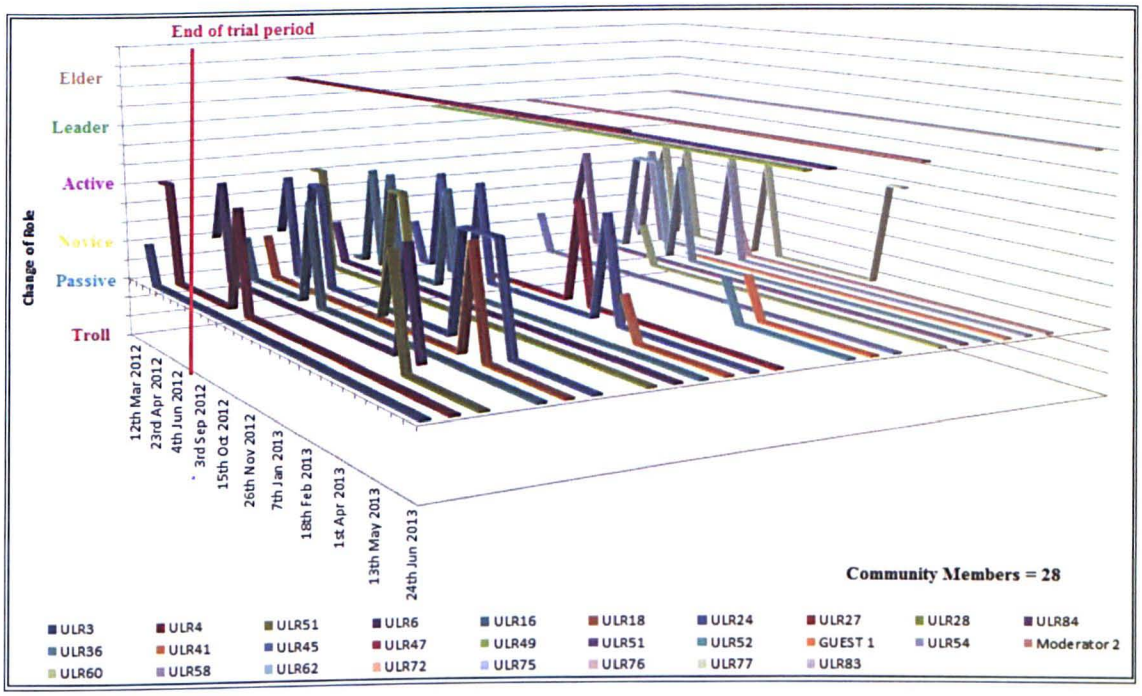
Open-ended Comments.	Focus
"Comments I left (on EIS forum) were always picked up by another LR or by administrator (sic). I felt that there was always a reliable colleague around on the site, usually someone I had met. I did not ever feel that way about Glow".	**Moderation**
"Happy to go with the majority, I must admit I am not on Glow normally so its slips my mind that there is a forum there". Sadly, because of the switch to GLOW, I got out of the habit of logging in regularly due to the difficulties which occurred and because of the lack of exclusivity. "	**Out of sight.**

A core theme that emerged from the September 2012 questionnaire was not only did ULRs feel the EIS hosted site was more secure, they also felt a greater degree of ownership. On a practical level they felt it made sense for the discussion forum to be homed here. ULRs regularly visited the EIS website to keep afresh of union news therefore it was logical to have it all online activities in one place. This encouraged online participation during Phase 1.0 and Phase 4.0 as it became a habit. Following the results of the questionnaire the discussion forum moved back to the EIS website.

4.18 PHASE 4.0- COMMUNITY ROLES

To fully explore Phase 4.0 each post was analysed in terms of the following three areas: member role, *focus* and *nature* of discussions. A graph of the changing roles can be seen below (Figure 4-77).

Figure 4-77. Changing member roles 2012-2013 (n=28)

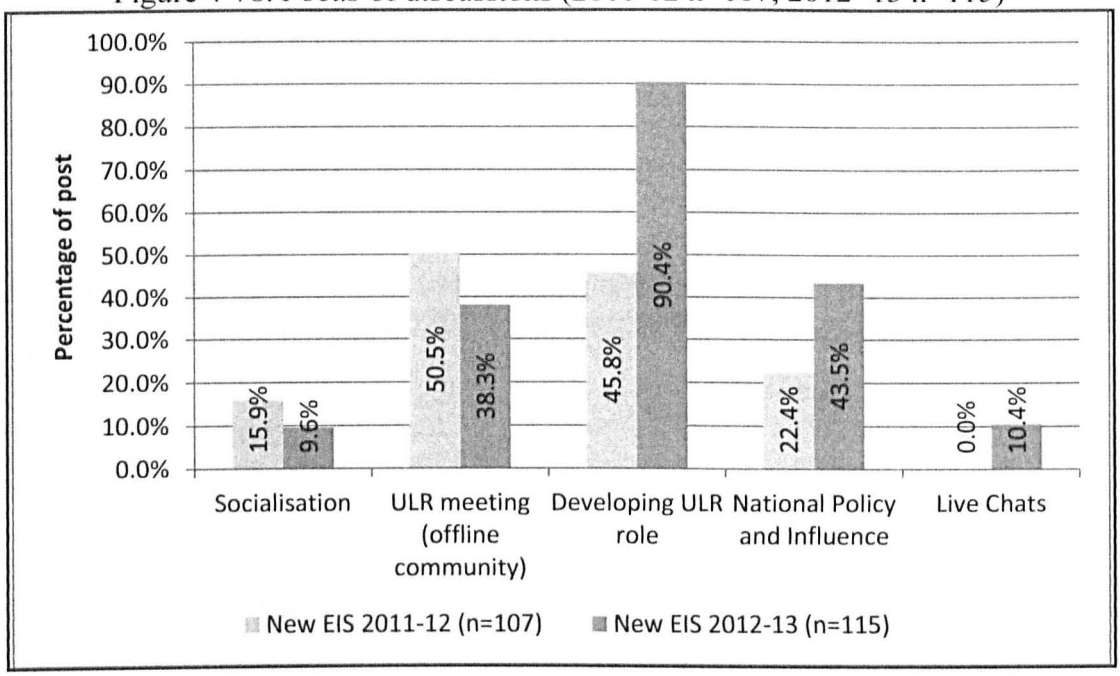


Whereas, Phase 2.0 had lacked Leaders, Phase 4.0 quickly saw the rise of new Leaders. Moderator 2 (staff Leader now given the responsibility for the New EIS forum) posted frequently. ULR18, ULR 83 and ULR 24 progressed to volunteer Leaders. Looking at the overall demographics of Phase 4.0 there appeared to be a return to a more balanced group membership with sufficient numbers of an Active-Passive core to create a sustainable community.

4.19 PHASE 4.0- FOCUS OF DISCUSSIONS

The content of each post was analysed to determine the *focus* of the discussions during this phase with a view to determining if the purpose of the community had changed following its online break (Figure 4-78).

Figure 4-78. *Focus* of discussions (2011-12 n=107, 2012=13 n=115)

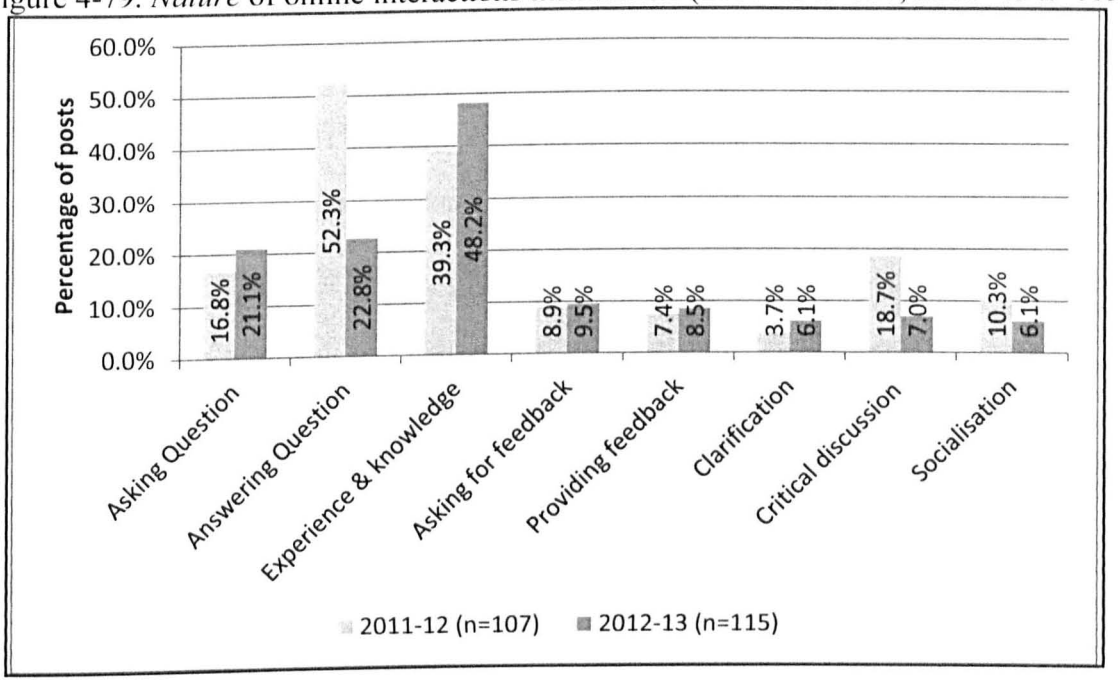


Socialisation was a key *focus* area for 2011-12 at 15.9% this was higher than during Phase 1.0. Looking at the content of the posts confirmed this reflected ULRs catching up again online after their absence. The dropped during 2012-13. Discussions focused on ULR meetings (offline) were back on the agenda. Content analysis indicated this resulted from the return of Moderator 2 (staff Leader) who led threads related to meetings. 'Developing the ULR role' and 'National policy and influence' were popular topics. Both saw a doubling from 2011-12 to 2012-13. During the session 2012-13 a new focus of ''Live chats' was added. (This was not the actual 'Live chat's themselves but threads concerned with the planning and organisation of synchronous discussions. The first ever held in ULR history). Collectively this indicated that the forum was back to functioning as an area were ULRs shared information and developed professional practice.

4.20 PHASE 4.0- *NATURE* OF THE INTERACTIONS

A similar pattern was seen for the *nature* of the interactions (Figure 4-79).

Figure 4-79. *Nature* of online interactions interactions (2011-12 n=107, 2012=13 n=115)



Looking at the *nature* of the discussions the ULRs fell back into the pattern of sharing experience and knowledge and asking and answering questions. There were more answers given than questions asked which indicated ULRs were engaging with each other online. High levels of sharing experience and knowledge suggested that ULRs were keen to share their offline activities online. Critical discussion featured heavily (18.7%) in 2011-12 suggesting more than information exchange occurred. This did drop in 2012-13 to 7.0%. In summary Phase 4.0 marked a return to an online community committed to sharing information and developing professional practices.

4.21 PHASE 4.0 – SYNCHRONOUS DISCUSSIONS

What was different about Phase 4.0 was the introduction of **'Live chat'**. In 2003 the idea of holding synchronous discussions was first raised but never actioned. Similarly during Phase 2.0 the ULRs had tried to hold a 'Live chat' session but the technology failed. Once again this topic was raised as a possible development for the community.

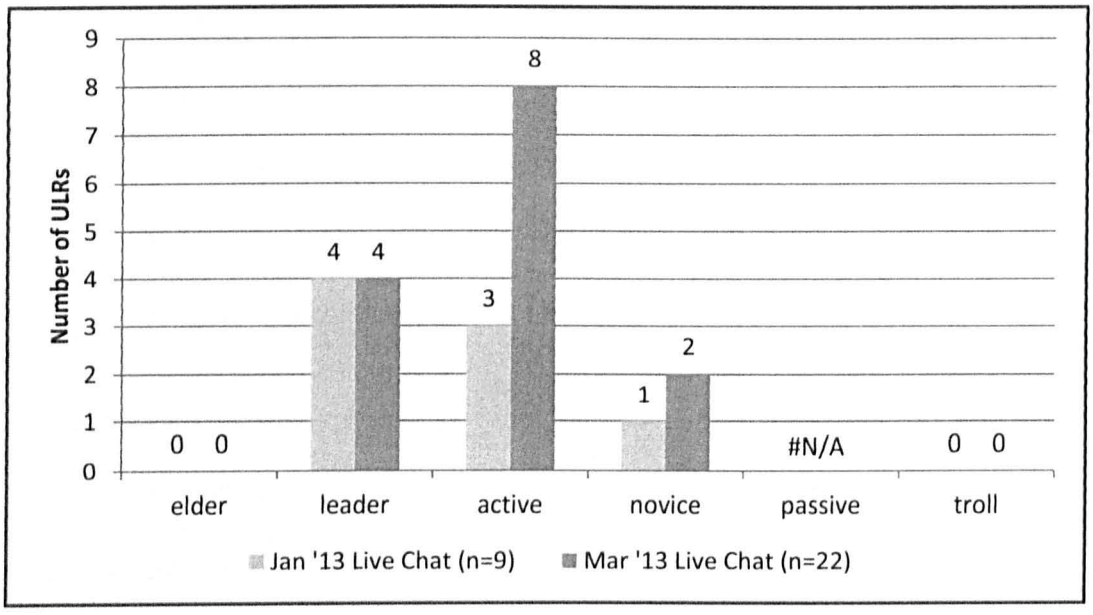
In early 2013 the first ''Live chat's' were held. They involved a basic **synchronous discussion** in that the ULRs utilised the same discussion forum as for the asynchronous chats but they agreed a time when they would be online. The focus of the discussions was agreed and distributed in advance.

- January – developing 'Live chat'.
- March- the role of the EIS in taking forward the CPD agenda in Scotland.

As with the asynchronous discussions each chat session was analysed to determine member roles involved, the *focus* of the discussions and the *nature* of the interactions.

The starting point for the 'Live chat' analysis was to determine who was participating. Had this new approach encouraged new participants (Figure 4-80).

Figure 4-80. Participants by role in 'Live chat' sessions Phase 4.0



Looking at the membership of the 'Live chat' sessions two trends were observed. First, more ULRs engaged in the second 'Live chat' than the first. Second, one ULR participated in the January 2013 'Live chat' and two ULRs participated in the March 2013 'Live chat' even though they had never participated in any other (asynchronous) discussions. These ULRs are denoted as Novice in Figure 4-80. This suggested this was a new strategy to

engage ULRs online. The idea was further investigated through semi-structured interviews with ULRs who had taken part in the 'Live chat' and ULRs who had not. It was particularly insightful to speak to a ULR who had joined the community during the failed transition to the Glow Group in Phase 2.0 as they explained how the difficulties had prevented them logging on and that this had become a habit.

> It's not a decision I've made [to not use the forum] but because my time is really short and I'm very busy I will only do what I have to do and if I don't need to use it I won't use it. That's the bottom line. If at the beginning everything had been directed that way [Glow] and I'd got into the habit that that was my first port of call for information I'd still be using it. Early in the beginning I found [Glow] difficult to get on. There was a lot of controversy about [Glow] and then it was use both and decide and I just didn't use any of it
>
> (ULR interview)

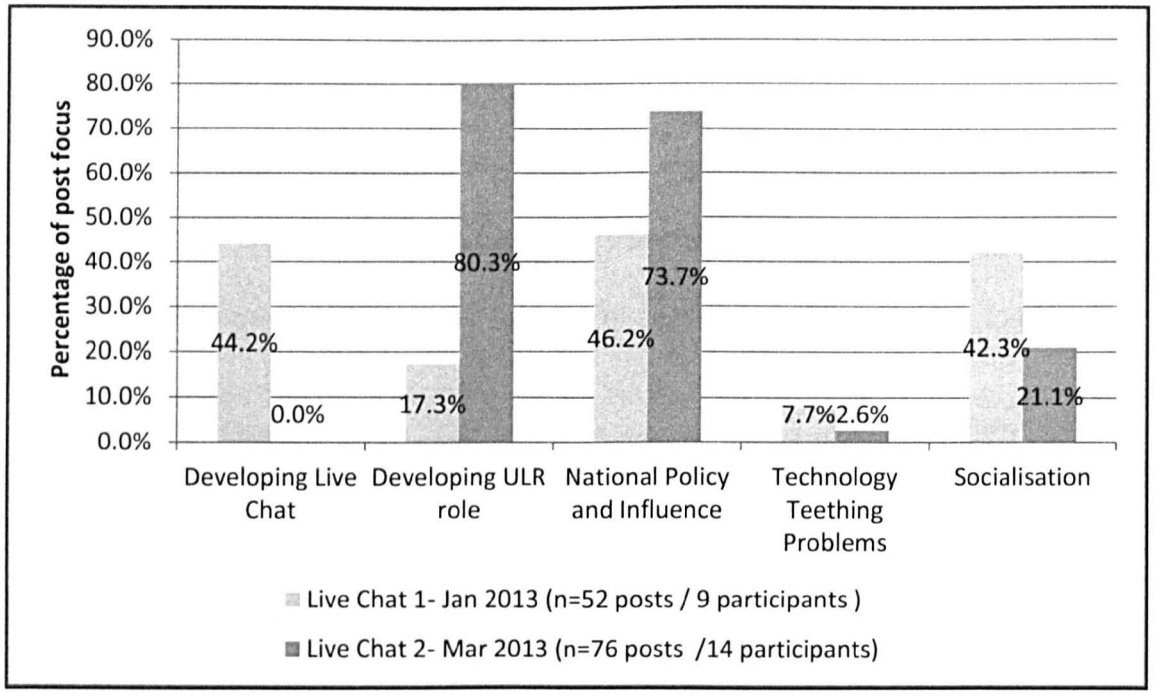
This suggested the failed transition to the Glow Group had created a temporary gap in online membership supporting the findings from earlier analysis.

Some ULRs participated in the first 'Live chat' but not the second. However, investigation through semi-structured interviews indicated this resulted from prior commitments and not because they had found the experience unsatisfactory. The ULR went on to say they would be interested in a 'Live chat' that had a clear and specific purpose.

> I wanted to take part in [CPD 'Live chat'] I just couldn't get to do it that day. Things like that are useful. I had intended to go I just couldn't be there. But things like that that which are a one off or a particular thing for a particular purpose.
>
> (ULR interview)

Each 'Live chat' had a specific *focus* that was distributed in advance. However, within this *focus* that was still evidence of discussion relating to the focus areas used to code the posts in the asynchronous environment (Figure 4-81).

Figure 4-81. *Focus* of synchronous discussions Phase 4.0 2013



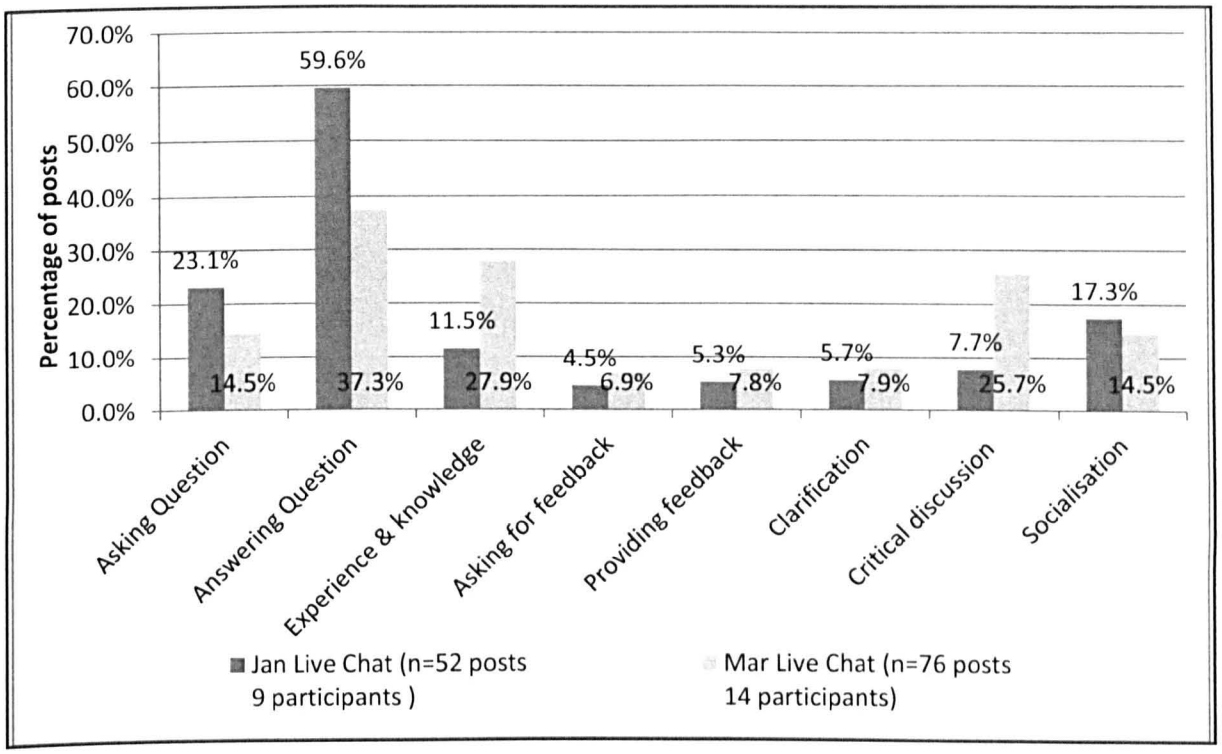
The first 'Live chat' had a greater emphasis on socialisation, possibly as this was the first time this had ever taken place. It also included discussions related to technical problems and how synchronous discussion could be used in the future. The second 'Live chat' was more 'business' orientated and focused on CPD. The ULRs who had participated were positive about the experience.

> I was on the 'Live chat'. I was on the second one. They are quite good. They are good when we have a focus to work around and discuss. I think it's quite a valuable thing. [Moderator 2] put out an email today [May 2013] about one in September and I think it's a valuable thing for us to put them in our diary. If we have a date in our diary and a topic or focus.
>
> (ULR interview)

Another ULR supported this and suggested that they would work well if there were three or four a year interspersed between the face to face ULR meetings with a clear focus. It was also suggested the 'Live chat' might encourage asynchronous discussion in the forum. Observations of the discussion forum supported this view as several follow-on asynchronous discussions were started following each 'Live chat'.

Finally the *nature* of the discussions that occurred in the 'Live chat' sessions was analysed to investigate if this was different from the pattern seen in the asynchronous environment (Figure 4-82).

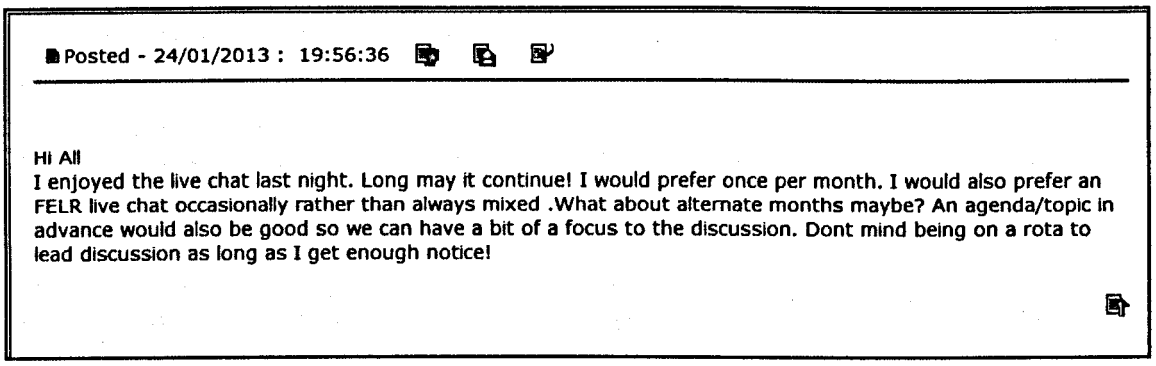
Figure 4-82. *Nature* of 'Live chat' discussions January and March 2013



What emerged was that Socialisation was more prevalent in the first 'Live chat' (17.3%) than the second (14.5%). The first 'Live chat' session lacked the specific focus of the second and was more a "what do we think?" discussion. The second 'Live chat' was organised differently. ULRs were issued with a list of five questions that would be explored during the synchronous discussion in advance. This appears to have altered the *nature* of the discussions. Sharing of experience and knowledge increased from 11.5% in the first 'Live chat' to 27.9% in the second. Critical discussion also increased from 7.7% to 25.7%. This suggested that although the discussion was 'live' ULRs had prepared some ideas in advance.

While the 'Live chat' sessions were still in their infancy there did appear to be support for the concept, with the caveat that their needed to be a clear and specific purpose for the discussion (Figure 4-83).

Figure 4-83. January 2013 'Live chat' asynchronous spin-off thread



4.22 SUMMARY OF PHASE 4.0

To conclude, Phase 4.0 saw an initial flurry of activity as ULRs went back online. This activity decreased in its second year. However, the synchronous 'Live chat' sessions appeared to be popular and marked a change in the way the ULRs communicated online.

4.23 DESCRIBING THE EIS ULRS ONLINE

Research question one asked "*How can we develop a model to describe a voluntary online teacher community*". Evidence from the data collection process indicated the EIS ULR's online community was a voluntary group primarily concerned with providing a forum to share experiences and answer questions with a view to developing their professional practice. Discussions focused on 'Developing their role' and exploring 'National policies and initiatives' such as Chartered Teacher and organising CPD events. The community operated on a need basis with members joining and leaving as required.

Chapter 5 will go on to explain how each element of the community (member roles, focus of discussions and nature of the interactions) can be brought together into a theoretical model before finally looking at strategies to develop the community.

Chapter 5: Analysis

Chapter 5 discusses the study findings outlined in Chapter 4 in reference to the pertinent literature laid out in Chapter 2. Section 5.1 brings together the data from observations, questionnaires and interviews and links it to existing literature in order to propose an alternative model to describe membership changes in a Voluntary closed community (VCC). Section 5.2 analyses the nature of the interactions in the ULR community and explores an alternative concept to the five-stage model (Salmon, 2004). Section 5.3 looks at a revised Life-cycle model based on observations of the community. Section 5.4 brings together these discussions into a unified model that describes and explains a voluntary closed online teacher community. Finally, Section 5.5 outlines the strategies that facilitate the development of a voluntary closed online teacher community. It includes a discussion on the effectiveness of synchronous 'Live chat' as a strategy for revitalising a voluntary closed online teacher community.

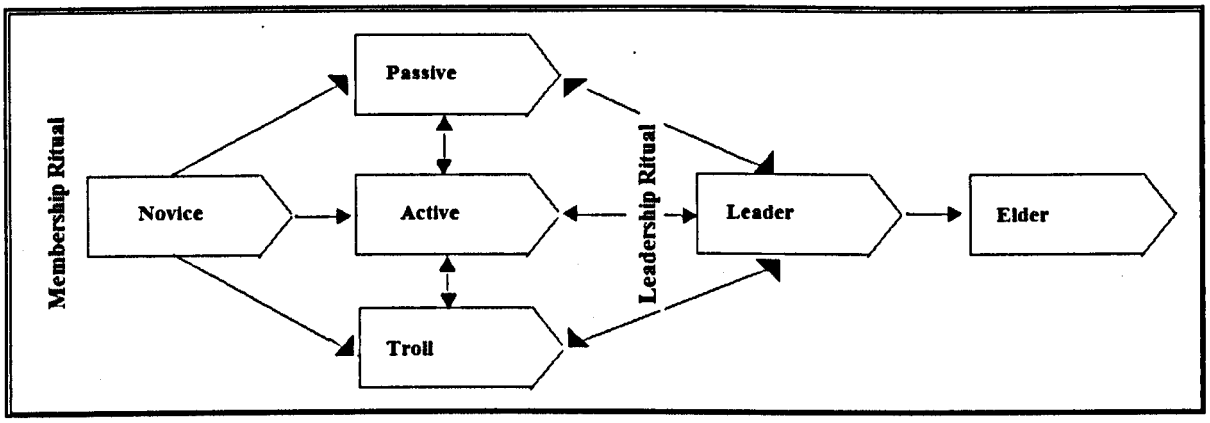
5.1 COMMUNITY MEMBERSHIP MODEL

Sonnenbichler (2009) argued that being able to model the membership of an online community was an important predicator of a group's success because:

> A structured community membership Life-cycle model can help to define an inner community target structure and to analyze and compare this with the current inner structure
>
> (Sonnenbichler, 2009, p.5)

Or to put it simply, a membership model can help a community to determine where they are presently and how this relates to where they would like to be. As was discussed in Section 2.5 a Unified member Life-cycle model was developed from a review of the work of Kim (2000), Sonnenbichler (2009) and Sonnenbichler and Bazant (2012) to provide a framework to describe community member changes (Figure 5-1).

Figure 5-1. Proposed Unified member Life-cycle model



The unified model was developed to address limitations identified with both pre-existing models to fully describe the roles of members in a Voluntary closed community. One of the objectives of this study was to test this model to determine if it could adequately describe and explain the member roles of teachers in such a community. The roles of Novice, Active, Leader and Elder were all clearly identified from content analysis of the forum posts. However, a number of problems emerged when trying to identify the roles of **Troll** and **Passive**.

The first problem identified was there was no evidence of **Trolls** in any Phase of the EIS community. However, this was not completely unexpected. Sonnenbichler and Bazant (2012) in their testing of Sonnenbichler's (2009) Membership model in hashtag based communities on Twitter also failed to find evidence of Trolls. While this was surprising in an open community like Twitter it was not so surprising in the closed ULR community. The work of Hardaker in her study of computer mediated communications suggested an explanation for the difficulties associated with identifying a Troll. She developed the following definition for a troll as

> a CMC user who constructs the identity of sincerely wishing to be part of the group in question, including professing, or conveying pseudo-sincere

> intentions, but whose real intention(s) is/are to cause disruption and/or to trigger or exacerbate conflict for the purposes of their own amusement
> (Hardaker, 2010, p.237)

Linking this definition to the process of becoming a ULR offers a reason why none existed in the community. To become a ULR an individual had to apply to the EIS and complete a period of successful online study before gaining access to the group. Each Phase consisted of a closed forum where everyone was identifiable. While a ULR could have constructed a false desire to join the ULR community they would have been identifiable and as such answerable to the community (online and offline). In this scenario with anonymity denied it would be difficult to gain amusement. This would suggest that while it may be possible at some point in the future to see poor behaviour (as defined by the social norms and behaviour of the group) it would be highly improbable to see a Troll. Consequently this indicated that the role should be removed from the Unified member Life-cycle model for communities of this kind. Instead the role was replaced with one that acknowledged the anti-social and disruptive element of Troll but one tempered by the lack of anonymity provided in a closed forum. This role was described as **Disruptive.**

Analysis of member behaviour indicated there were a number of ULRs who satisfied the criteria of **Passive** within the community. "*Members are classified as passive if no posts were observed during the last 2 weeks*" (Sonnenbichler and Bazant, 2012, p.304). However, the Passive criteria did not fully explain the behaviour of all members who did not visibly participate. Closer inspection revealed this group was not as homologous as first thought. Instead it appeared some ULRs behaviour was more consistent with a Passive-Lurker role and others seemed to be Passive-Abandon.

Lurking is a term often associated with passive behaviour. It is a membership role that is often viewed poorly. However, Nimrod (2012) argues that while it may not result in as many benefits as being Active it can empower the individual and is not as negative a role as previously thought. Certainly some ULR's self-identified with the lurker identity:

> I must admit I tend to be a lurker
>
> (ULR interview)

Further evidence of Passive-Lurkers came from analysis of the number of replies to a thread compared to the number of times it was read. This suggested more ULRs accessed the content than contributed (Section 4.7, 4.8). This would indicate that there was a group of ULRs who were not visible but consumed the online content. Sonnenbichler and Bazant (2012) in their testing of the original model stated that Passives were the hardest membership group to identify and that it took the longest time to do so. The findings and analysis of this membership role are comparable to their work.

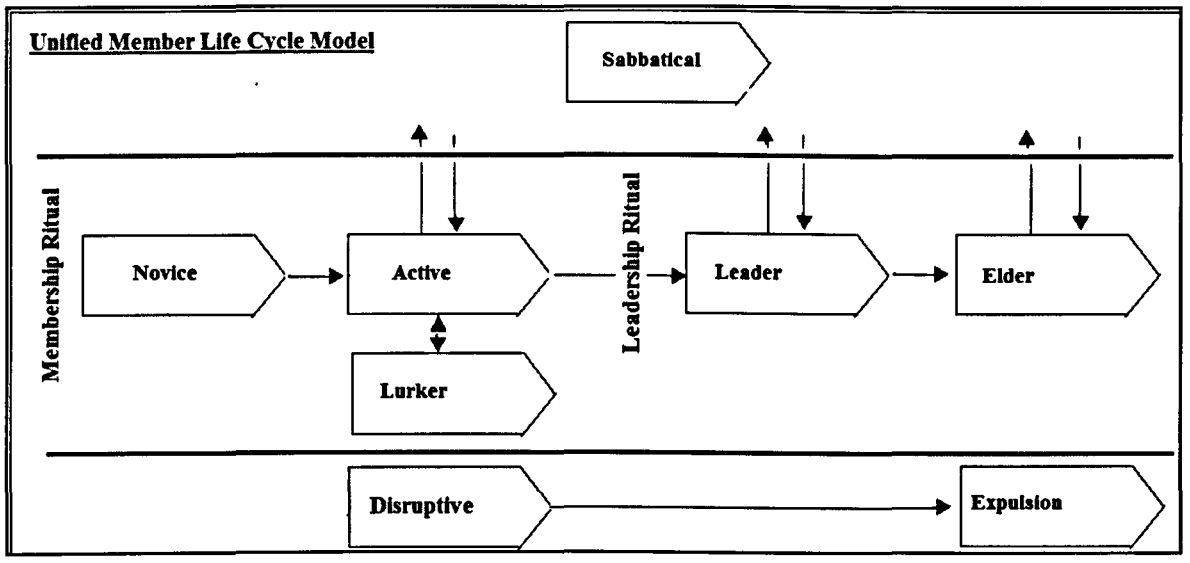
In contrast some Passives appeared to have temporarily left the group for an extended absence. As was discussed in Section 2.2 by Ren *et al.* (2012) the retention of active members is a significant worry for OCs as if too many people leave the community will ultimately fail. Observations indicated some ULRs left the online group shortly after joining, consistent with the discover–join–abandon membership Life-cycle proposed by Arrasvuori *et al.* (2008). In contrast, some ULRs would take extended 'breaks' from the online community during their membership and return as and when their need required. This claim can be supported by the loss of a number of experienced ULRs who did not participate in 2005-06 but who became Active once again in 2006-07 to share their newly acquired experiences and knowledge. They then left the group again in 2007-08.

It was this evidence of fluctuating extended absences, as opposed to traditional **Passive-Lurkers** that led to the introduction of a new role, **Sabbatical**. This role was difficult to discern from casual observation of levels of activity as they would appear as a Lurker. Identification required a deeper knowledge of the context (both online and offline) in of each member. Specifically it required a community Leader to make contact with the member in order to investigate the reasons for their absence and determine if support was required.

Members were defined as **Sabbatical** if they elected to take an extended leave of absence from the group. It could be argued that differentiating a member as Sabbatical as opposed to Passive-Luker was irrelevant (in that at that point in time it does not impact on the activity in the group). However, it may result in a long term positive impact for the community. Membership retention for online communities was a problem highlighted by Ren *et al.* (2012). The **Sabbatical** role may offer a solution to this problem. If a community Leader identified previously Active members as becoming less engaged they could communicate with them and provide an 'open invitation' to take a **Sabbatical** and return when ready. The role of **Sabbatical** may allow the individual an opportunity to maintain a weak link with the community and the option to return at a later date. This may prevent a temporary absence becoming permanent. The actions of the community Leader would be consistent with existing guidelines on e-moderation as published by Salmon (2004).

The first research question asked how we could describe a voluntary online community. The observations above led to a revision of the Unified member Life-cycle model to describe the members of such a community (Figure 5-2).

Figure 5-2. Revised Unified member Life-cycle model



The central core of the model remained the same but with some amendments. Passive was changed to **Lurker** as the ULRs themselves used this term to describe their own behaviour when looking but not posting.

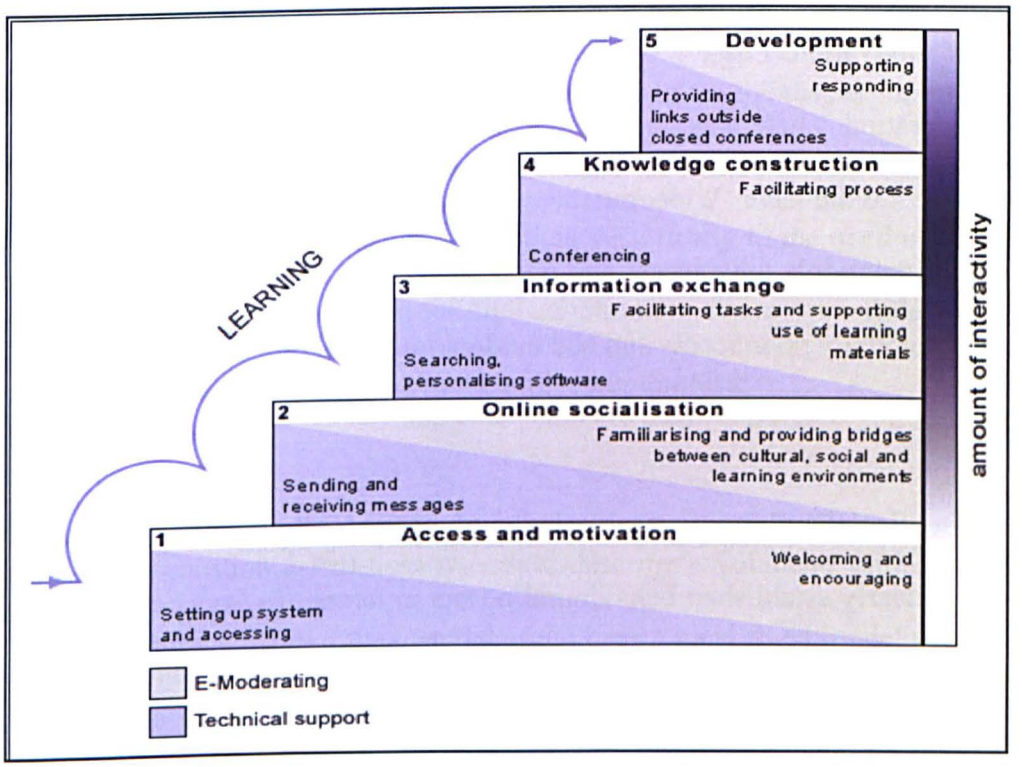
The model also acknowledged the unlikelihood of the appearance of the role of **Troll** in a Voluntary Close Community that lacked anonymity. Instead the role was changed to **Disruptive**. It was included in the model as it was felt that while extreme anti-social behaviour was unlikely it could not be definitively ruled out. Even in a closed community with strict behavioural norms. Furthermore, it was linked to the role of **Expulsion** given that in the unlikely event of continued extreme anti-social behaviour union protocols would result in the individual being the subject of disciplinary procedures resulting in their removal from both the online and offline community.

A new role was introduced, that of **Sabbatical**. This role describes an individual who has taken a temporary leave of absence from the community. This leave of absence is different from Arrasvuori *et al.'s* (2008) abandonment in that while the member is not presently participating in the online community their intention is to return.

5.2 *NATURE* OF INTERACTIONS IN A VOLUNTARY CLOSED COMMUNITY

Salmon's (2004) Five-stage model provided the initial conceptual framework to describe and explain the nature of the interactions in the ULR community. Her model was originally developed for use in formalised learning environments but it had been extended to other contexts over recent years (Salmon, 2013). The objective here was to determine the extent to which it was applicable in a Voluntary closed community with the purpose of sharing and developing professional practices (Figure 5-3).

Figure 5-3. Five-stage model (Salmon 2004)



When testing Salmon's (2004) Five-stage model in the Voluntary Closed ULR Community a number of problems emerged. First, while analysis of the *focus* of the discussions taking place indicated that ULRs were interested in sharing information and developing the professional practices of being a ULR their community lacked the fixed timeline associated with an e-learning course. Second, while the ULR community had a relatively stable core membership there were continual changes from year to year as additional ULRs joined and left. This meant the group needed to constantly look at its social cohesiveness and shared

purpose. When applying the individual stages in Salmon's (2004) model to the ULR community these problems became more evident.

The first stage in the model related to **Access and Motivation**. For the Phase 1.0 and Phase 4.0 communities access was not a difficulty. All of the ULRs were able to log on to the discussion forum. For the Phase 2.0 Glow Group this became a major obstacle. ULRs struggled with technical difficulties associated with Glow and the ongoing problems caused frustrations, which in part contributed to the decline of the group. This then left the question of motivation. Phase 2.0 Glow Group had no staff Leader and suffered from a lack of moderation. There was no evidence of 'Welcome threads and socialisation. Phase 1.0 and Phase 4.0 did have 'Welcome threads', however, they were not widely used. What emerged was that while easy access and good moderation did not guarantee the success of an online community poor access and bad moderation could quickly kill it.

Overt **Online Socialisation** was rarely a hallmark of the ULR community. While there was evidence of clearly established behavioural norms in terms of respect and courtesy ULRs did not appear to need much in the way of social chit-chat. Content analysis of the posts indicated that they were often business-like in tone. '*This is my problem. Can someone help.*' This was not to say that the ULRs were not sociable, it just appeared that the underlying purpose of the group was to solve problems and develop the practice of being a ULR. Sociability was secondary.

The ULR community appeared to fluctuate between **Information Exchange** and **Knowledge Construction**. What distinguished this fluctuation from Salmon's (2004) hierarchical model was that this did not seem to be linked to increased level of interactivity

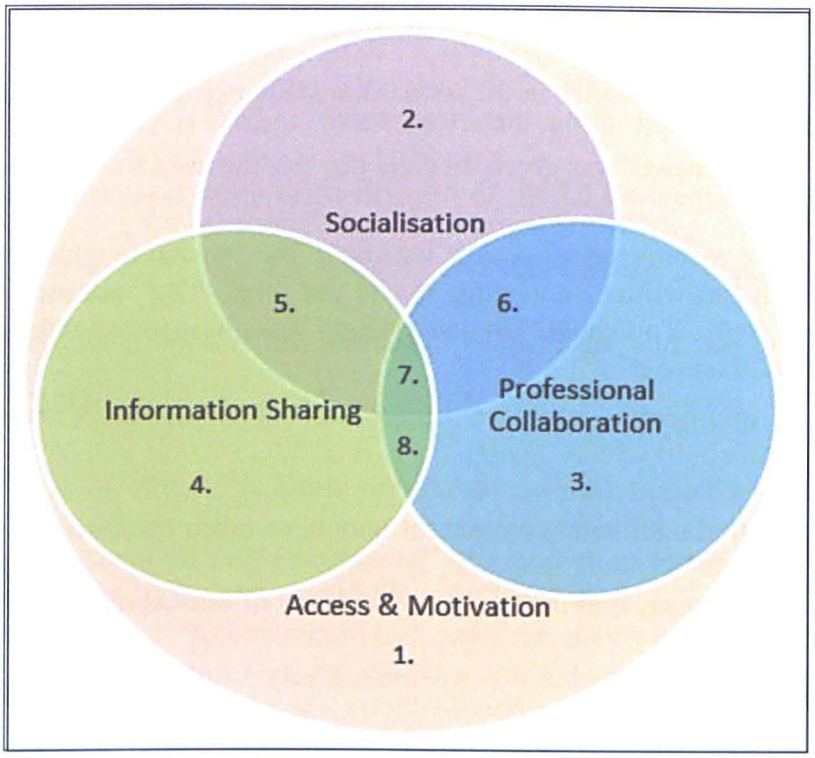
stemming from increased confidence with the technology and a shared purpose. Instead it was linked to the individual's purpose of enquiry. If the purpose of the post was to get a simple answer then the level of interaction generally remained at an Information Exchange level. Threads were often shorter in duration. One ULR expanded on this in an interview and stated that if and answer was given they did not feel the need to expand on it:

> I do enjoy reading posts. And it is usually the inevitable where you think somebody has written something up and you think "Oh!" but someone beats you to a reply. You know "Oh that's what I was going to say more or less so you tend to leave it".
>
> (ULR interview)

If they had posted that additional comment it may have taken the discussion in a different direction. This is not to say that there was no evidence of critical discussion, disagreement and professional collaboration, but this was linked very firmly to the need of the query as opposed to the overall development of the community. There was little evidence of progression to **Development** activities in the online community.

The first research question asked how we could describe a voluntary online community. The difficulties described above suggested that the hierarchical fixed model was not suited to describing and explaining the *focus* and *nature* of interaction in an open and ongoing online community. This led to a revised model for describing closed teacher communities, the Voluntary closed community model (Figure 5-4).

Figure 5-4. Voluntary closed community model



The first notable difference between this model and Salmon's (2004) is that it is primarily flat in structure. With the exception being that Area 1: Motivation and access must be achieved first. In that if a ULR cannot access the community because of technical difficulties then logically they cannot share information etc. Similarly, if they could log on but were not motivated to do so then there would be no online community to observe. However, within the three areas of Information sharing, Socialisation, and Professional collaboration there is no vertical progression. Instead the community member can cross between the different types of interaction dependent on their need at any point in time. A description of each area is provided below (Table 5-1).

Table 5-1. Description of Voluntary closed community model areas

Area	Name	Description
1	Access and Motivation	ULR is able to log on to the community and is motivated to do so.
2	Socialisation	Content not directly related to the role of the ULR but evidence of the social glue that holds a community together
3	Professional Collaboration	This replaced Knowledge Construction. The emphasis was on ULRs sharing ideas to co-construction professional practices.
4	Information sharing	Information sharing involves transferring information from one ULR to another. There was no evidence of critical analysis or evaluation of the information transmitted.
5	Information Sharing and Socialisation	Union of area 4 and 2. Where Information Sharing and Socialisation meet.
6	Professional Collaboration and Socialisation	Union 3 and 2. Where Professional Collaboration and Socialisation meet.
7	Information Sharing and Professional Collaboration and Socialisation	Union 2, 3 and 4. Where Information Sharing, Professional Collaboration and Socialisation meet.
8	Information sharing and Professional Collaboration	Union 4 and 3. Critical discussion of the shared information.

Areas 5, 6, 7 and 8 described the areas of union between socialisation, information sharing and professional collaboration. These unions reflect areas where the community members moved between the different types of interactions within the one thread. The union areas are important in that they reflect the 'messiness' of an online community created with the purpose of sharing and developing professional practices. Posts did not always reflect one purpose but an amalgamation of different needs. These needs did not arise from an individual's developmental stage in the five-stage model but the purpose of their post, the reason why they had been motivated to access the forum. For example, a ULR could share information and socialise simultaneously. Alternatively a ULR may respond to query with a direct reply but also provided some critical commentary regarding the deeper practice implications that underpinned the question.

For example thread ***"Learning Rep motions"*** started on the 13th December 2007 (approximately 3 years into Phase 1.0). It contained 21 posts and ran until the 14th February 2008. It explored how the ULRs could raise motions to be discussed at the annual EIS AGM in order to raise their profile within the union. The overarching *focus* of the thread was linked to discussion of National Policy and Initiatives. The thread included posts that ranged from sharing information, professional collaboration to socialisation and a mix of all three. The level of interaction during this discussion was necessitated by the simple fact that the issue of motions had to be discussed and resolved quickly to meet external deadlines. To present a competent motion they had to critically discuss some complex issues. This required a deeper level of interaction than a thread asking for a suitable speaker for a CPD event.

It was these complexities that necessitated the need for a model that recognised the complexities of an online community where cross-over between information sharing, collaboration and socialisation could be seen (or not). Being able to accurately describe the socially constructed realities of the online community allowed for a deeper understanding of its purpose. And as Preece (2004) argues, understanding the purpose of a community is essential for its success.

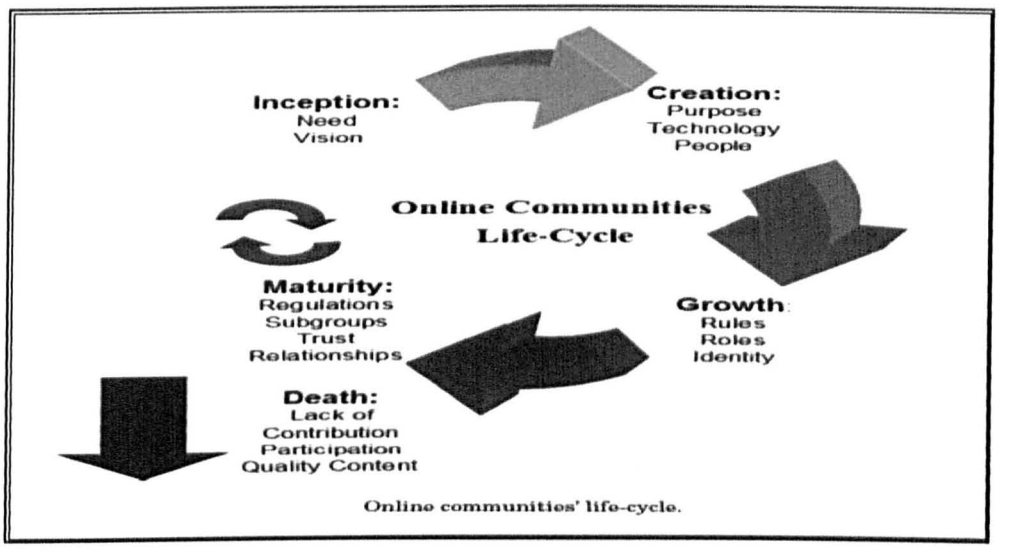
When addressing the first research question models were established to describe and explain changing member roles and the *nature* of the interactions that took place. The final stage was to develop a model to describe and explain the group's Life-cycle.

5.3 COMMUNITY LIFE-CYCLE MODEL

Iriberri and Leroy's (2009) Community Life-cycle model was used as a theoretical model to understand the top level changes that occurred in the ULR community during the longitudinal study. The model comprised of five stages Inception, Creation, Growth,

Maturity and Death. The central tenant of the model is that an online community should evolve through each phase and that success can be optimised by considering the supports required at each (Figure 5-5).

Figure 5-5. Life-cycle model (Iriberri and Leroy 2009)



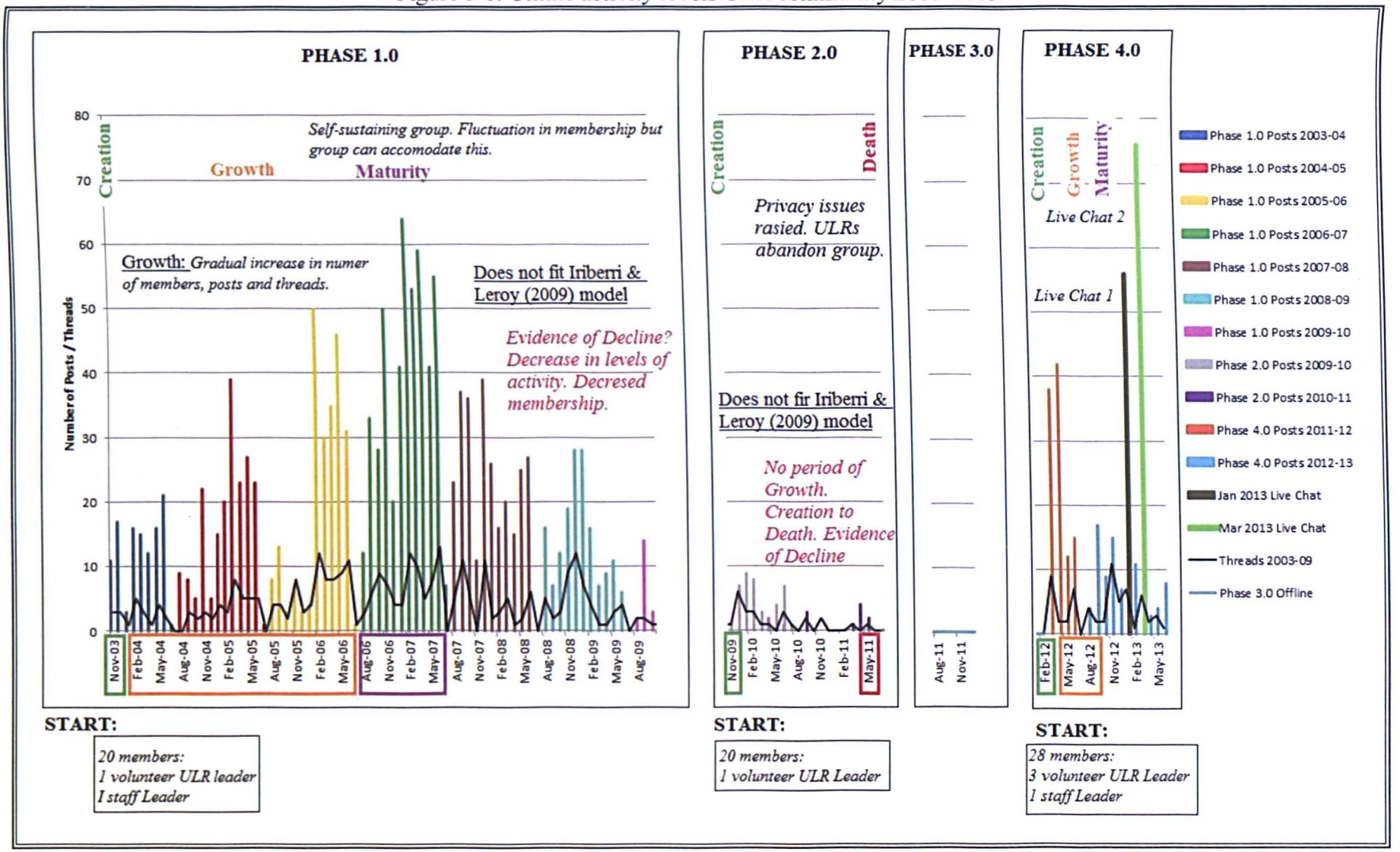
The data presented in Chapter 4 was mapped onto this model to identify the key stages in the Life-cycle of the community across each Phase in its development. The stages in Life-cycle markers in terms of changing roles, activity levels and the *nature* and *focus* of the interactions were identified.

However, a number of problems emerged with this process that suggested the model was not fully able to describe and explain the ULR community Life-cycle. Table 5-2 shows and Figure 5-6 illustrates the original mapping exercise.

Table 5-2. ULR Community Life-cycle mapping 2003-2013

Stage	Phase 1.0	Phase 2.0	Phase 3.0 (Offline	Phase 4.0
Inception	**June 2003** first ULRs graduate decision taken to start online forum.			August 2011 – trial announced.
Creation	**November 2003** forum begins.	November 2010 Phase 2.0 begins.		Trial begins March 2012.
Growth	**2003-04 – 2005-06:** 18 ULRs post on the community in the first academic year 2003-04.	No evidence – jumped this Step.		March 2012 – January 2013 Numbers of ULRs increased. Initially flurry of activity from March 2012- June 2012.
Maturity	**2006-07:** Lasting relationships develop. Evidence of membership turnover. As new members join and take over roles left vacant.	No evidence – jumped this Step.		Jan 2013 and March 2013 saw the first synchronous 'Live chat's. Increased activity in terms of posts and ULRs logging on who had never previously engaged online. Maturity?
Decline (not official category)	**2007-08 – 2009-10:**	Community jumped from Creation to decline. No evidence of Growth or Maturity. Activity levels. Number of members and nature of interactions all declined.		August 2012 – June 2013 saw decreased numbers of ULRs participating in asynchronous discussions and decreased numbers of posts and threads. Decline?
Death		Following revelations of lack of privacy ULRs abandoned Glow Group. No further online engagement.		
Rebirth (not official category)			ULR offline. Decision taken to restart community on EIS.	

Figure 5-6. Online activity levels ULR community 2003-2013



While Iriberri and Leroy's (2009) model could identify the Creation, Growth, Maturity and Death categories in each of the Phases of the online ULR community it did not allow for the periods of decline and re-birth that were identified throughout the Case Study and as seen in Table 5-2 and Figure 5-6.

During Phase 1.0, academic session 2007-08 (Figure 5-7), activity levels on the online forum decreased. Fewer threads were started and fewer posts made. The number of ULRs participating decreased. Online community membership had declined before (during 2005-06). However, in 2007-08 this loss of membership was different for two reasons. First, during 2005-06 there was still a growth in activity level as the remaining ULRs continued to post more frequently. This time the reduction in membership resulted in a decline in online activity. Second, this reduction signified the start of a downwards trend as opposed to a temporary glitch, as evidenced by further membership losses and activity levels in 2008-09. The ULRs did not appear to be on a Sabbatical (Section 5.2) but had abandoned the group as described by Arrasvuori *et al.'s* (2008) discover–join–abandon membership Life-Cycle.

Iriberri and Leroy's (2009) model did not contain an explicit category to define a decrease in activity before **Death**. (Or suggest linked strategies that could be utilised to reverse such a state). Referring back to the first research question and how we could describe a voluntary online teacher community the analysis of the results obtained from observations suggested the model warranted amendment with the inclusion of a **Decline** category. Based on the findings from the study **Decline** is identified by a decreased level in terms of number of posts and threads. Number of members who were actively participating would also decrease alongside a corresponding rise in Lurker members. However, with less content to consume these Lurkers may also become less satisfied and leave the community. The number of Leaders may decrease, however if this remained static they may post less

frequently. Some members may choose to abandon the group altogether (Arrasvuori *et al.* 2008) or take a **Sabbatical**. The *nature* of the online interactions may begin to change becoming less critical and less indicative of professional collaboration to being more concerned with lower level information exchange.

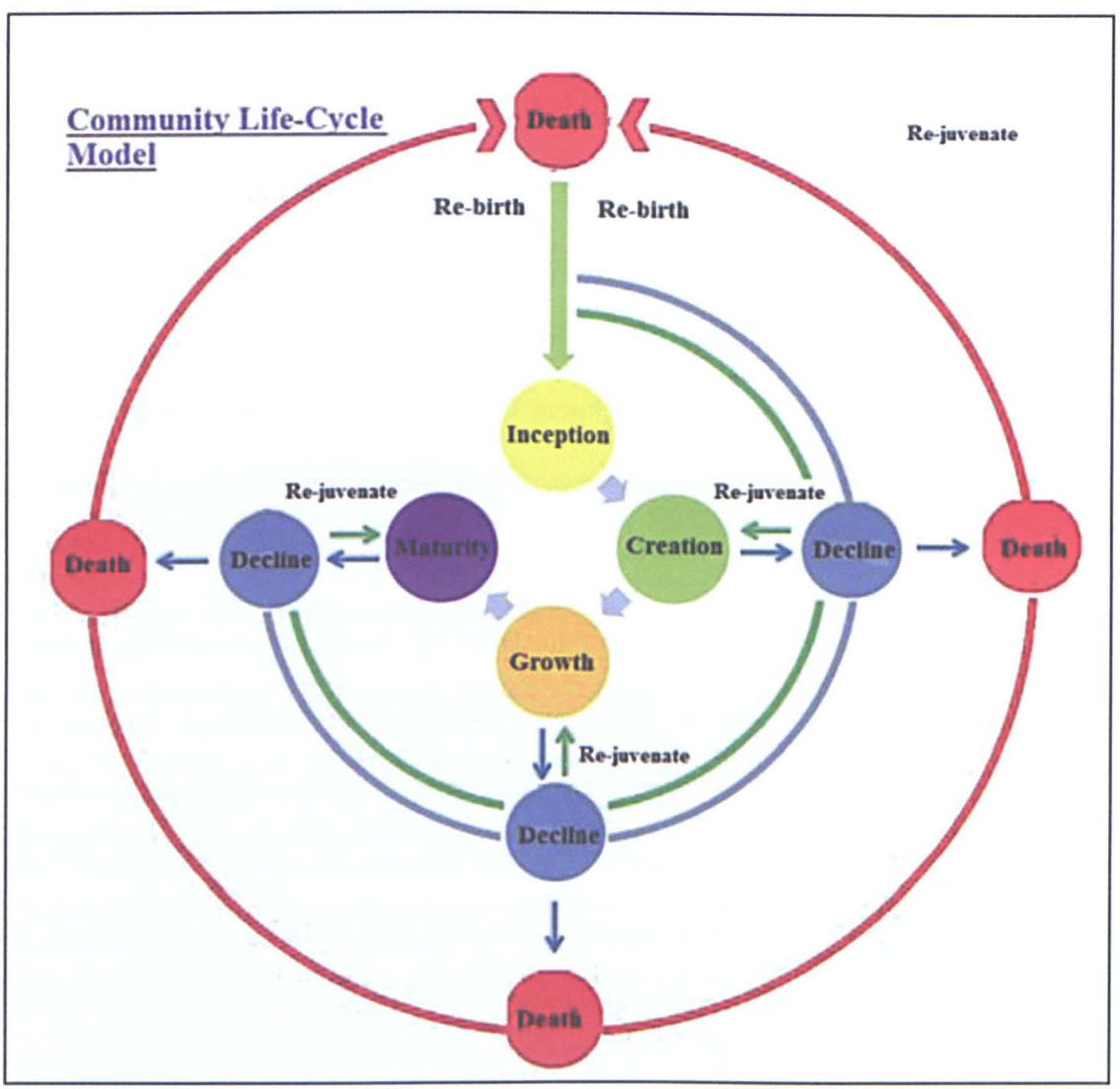
Problems with Iriberri and Leroy's (2009) model also arose when applied to Phase 2.0 and suggested further amendments were required in order to fully address the first research question (Figure 5-6). Iriberri and Leroy's (2009) model described a transition from Inception – Creation – Growth – Maturity (and then possibly Death) in a cyclical process. However, based on their model, during Phase 2.0 the online community jumped from Creation to Death. This suggested that in reality the model was not a smooth process. To accommodate this change Iriberri and Leroy's (2009) model was adapted to include the option to move from any category to Decline or Death. This was felt important not to highlight failure but to ensure early identification of difficulties in order to stage an early intervention. To accommodate this amendment the additional process of **Rejuvenate** was added into the model to allow for an intervention to support a community in **Decline**.

Finally, during Phase 3.0 the online community **Died** but the offline community continued. Following the decision to re-start the community back on the EIS webpage the community moved online again at Phase 4.0 (Figure 5-6). This raised the interesting question. Was this a new group or was this an existing group that had adapted and changed to the prevailing circumstances. Analysis of the membership indicated that while there were some new members there was still a number of long standing ULRs. Content analysis of the *focus* of the discussions suggested that the purpose of the group was also similar to what it had been earlier in its history. This suggested Phase 4.0 was not a new community but a **Re-birth** of the old one. With this in mind a further category was included into the Iriberri and Leroy (2009) model, **Re-birth**. Based on the findings from the study **Re-birth** is identified as the

return to growth of a community (in terms of number of members, levels of activity and *nature* of the interactions) that had previously **Died,** following successful **Rejuvenation**.

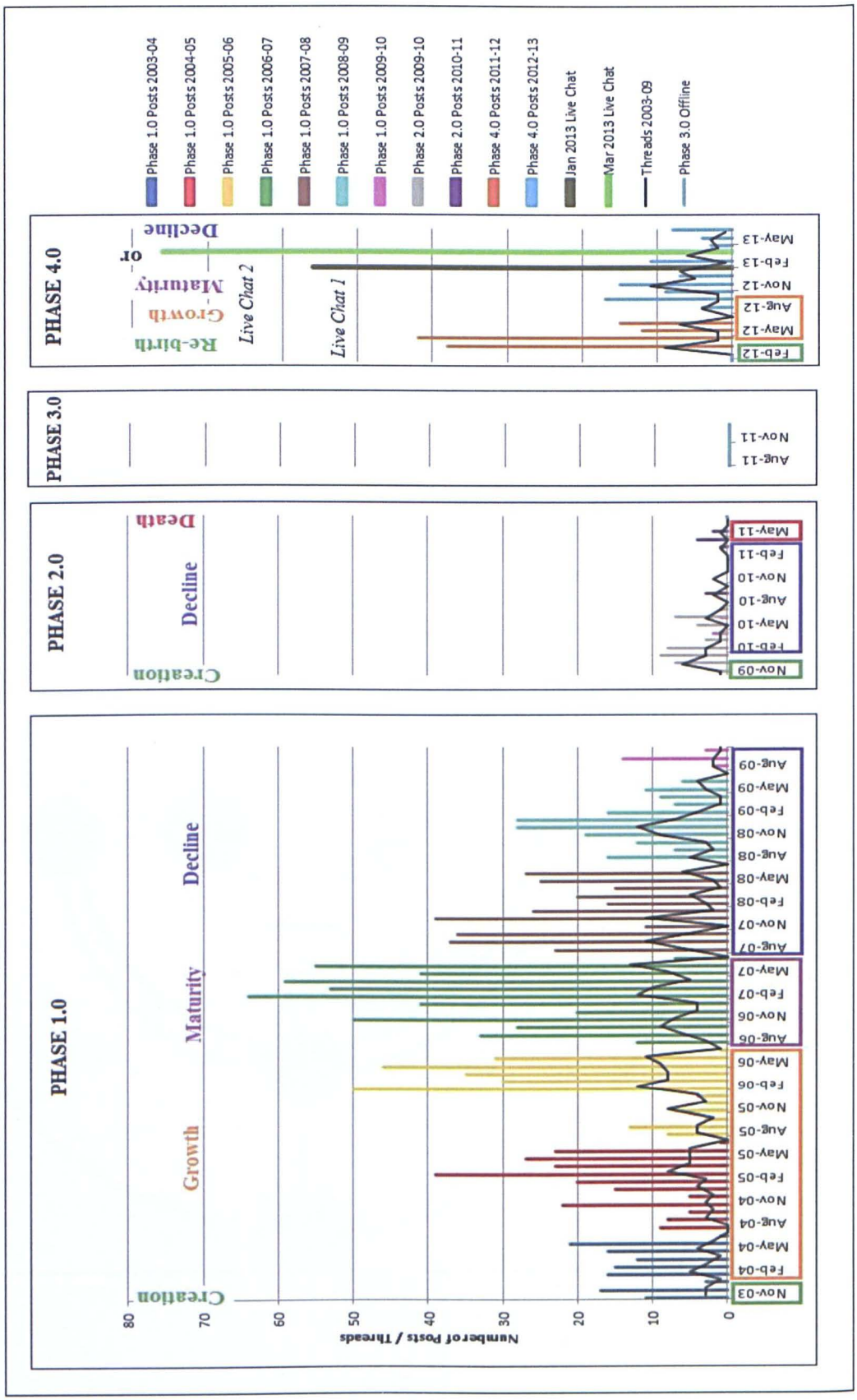
These changes were then accommodated into an adapted version of Iriberri and Leroy's (2009) Life-cycle model. These changes, as shown below, were included in order to fully answer research question one and describe the Life-cycle of a voluntary online teacher community (Figure 5-7).

Figure 5-7. Online community life-cycle model



While the core of the model was similar to Iriberri and Leroy's (2009) model some changes were made to reflect the findings from this study. **Decline** was added as a new stage. At any point from Creation through to Maturity the community could see a reduction in membership, activity levels and nature of interactions that would collectively indicate this stage. **Rejuvenation** was added to describe the process whereby **Decline** could be halted before the community reached **Death**. There was no direct link between **Maturity** and Inception. If a community went into a **Decline** that resulted in Death then it could not simply undergo a period of **rejuvenation**. Instead it had to start again at **Inception**. In response to this Re-**birth** was added as a new process to describe an online community that had died and successfully restarted. However, this was not simply a restart of the old community. Figure 5-8 describes how this new model was mapped onto the online ULR community.

Figure 5-8. Revised online community life-cycle mapping with new model 2003-1013



Looking at Figure 5-8 above the following stages in the life-cycle of the group were identified. Phase 1.0 was **Created** in 2003. The community then experienced a **Growth** stage in terms of activity and membership. The community reached **Maturity** stage during the academic year 2006-07. 2007-08 saw the start of a stage of **Decline,** Phase 2.0 marked the transition to Glow. Following the **Creation** of the Glow group the community quickly went into a stage of **Decline** in terms of activity and members. This was quickly followed by the **Death** of the online community after issues of privacy and ownership emerged. This started a period offline, Period (9). A return back to the EIS website saw the **Re-birth** of a new online community. The community enjoyed a period of Growth in terms of activity and members but not to the historic levels. From 2013 the community began using synchronous 'Live chat' sessions and this appeared to be popular with the membership. There was insufficient evidence to confirm if this indicated a move to **Maturity** stage (focused on synchronous chat session) or **Decline** stage (low levels of activity).

Referring back to the first research question, three individual models were identified that could describe a voluntary online teacher community. These models included the Unified member Life-cycle model (to describe community roles), the Voluntary closed community Model (to describe the *nature* of the interactions) and the Community Life-cycle Model (overall activity levels). Having identified models that could describe and explain different aspects of the ULR online community the final step was to investigate if these elements could be brought together into a unified model.

5.4 UNIFIED MODEL TO DESCRIBE AND EXPLAIN VOLUNTARY CLOSED COMMUNITIES

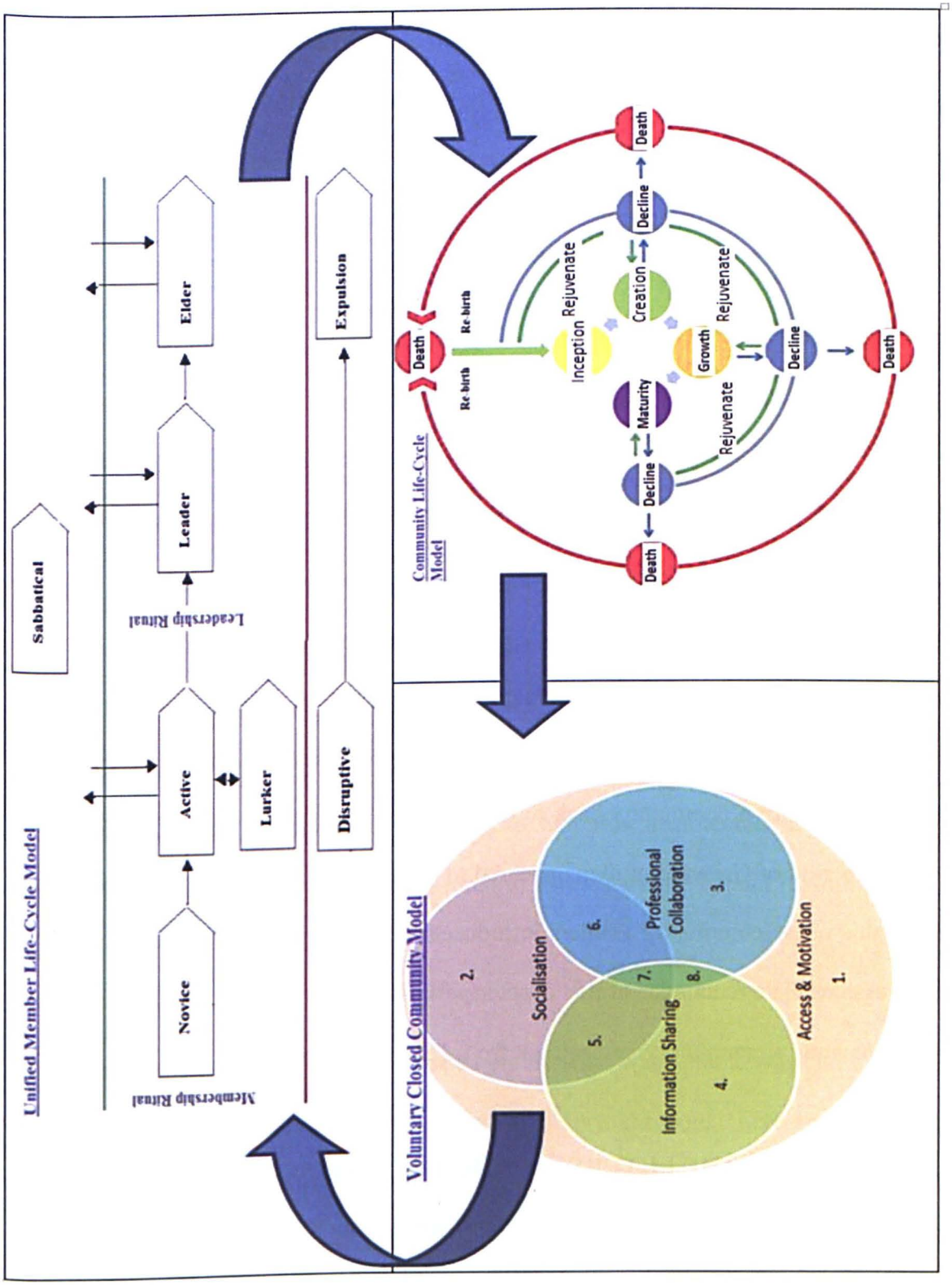
In the literature review in Section 2.2 a number of models were presented that have been used to describe online communities. While there were some differences they shared a common core of looking at the people, purpose and practices of the group. For example,

Wenger's (1998, p.1) CoP model was composed of the three elements: domain, community and practice. In Preece's model for online communities the following elements were required: people, shared purpose, policies and a computer system (2006, p.10). This suggested that for a model to fully describe and explain the nature and interactions of an online community it needed to look at:

- The *purpose* of the community as constructed by its members.
- The changing *role* of the people in the community.
- The *nature* of the interactions taking place and how this linked to *practices* of the community.
- The impact these factors had on the overall Life-cycle of the community.

While the models presented in Section 2.2 discussed each aspect separately (for example, Sonnenbichler 2009; Salmon 2004; Kim 2000) analysis of the data from the Case Study indicated that all three were linked. The *purpose* of the community influenced who would join and the *roles* they would adopt. The community dynamics set the *nature* of the interactions that took place, which in turn impacted on the Life-cycle of the community. In order to fully address the first research question and describe a voluntary online teacher community these models were brought together. Bringing together the Unified member Life-cycle model (to describe community roles), the Voluntary closed community Model (to describe the *nature* of the interactions) and the Community Life-cycle Model (overall activity levels) resulted in the creation of a Unified Voluntary Closed Communities Model (Unified VCC Model) (Figure 5-9).

Figure 5-9. Unified model for voluntary closed communities.



Having established a model to describe a voluntary online teacher community the second research question asked how we could explain the practices of such a community.

Looking at Figure 5-8 above the following stages in the community life-cycle of the group were identified. If the community has a diverse membership then there is more likelihood that there will be a variety of discussions taking place. This variety will then encourage further members to join or participate which will in turn fuel further Growth. As members progress to Leader roles this experience can lead to more critical discussions, which move the overall Life-cycle to Mature. Conversely the opposite can happen. Shallow interactions and poor quality discussions prompt individuals to leave the community, which in turn fuels further Declines.

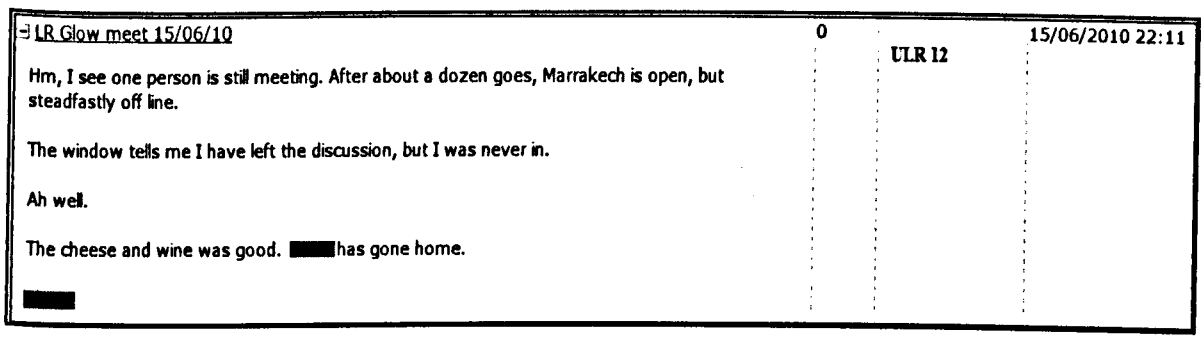
Halting Decline in an online community has long been a challenge for community planners. The Community Life-cycle model included a rejuvenation process to halt Decline and return a community back to Growth. The Phase 4.0 community experienced an initial period of Growth but then appeared to go into a Decline. However, towards the end of this phase community Leaders introduced the idea of hosting synchronous 'Live chat' sessions. The remainder of this chapter will discuss the success of this intervention in Rejuvenating a community, returning it from Decline to Growth.

5.5 LOOKING TO THE FUTURE, SYNCHRONOUS DISCUSSIONS

The third research question asked what strategies could facilitate the development of voluntary online teacher communities. One successful strategy that emerged during Phase 4.0 was the use of synchronous chat to stimulate the online community. In the first year of the Phase 1.0 community the question of holding a real time synchronous discussion was

raised. It was not until January 2013 that a synchronous 'Live chat' actually took place. The Glow technology used during Phase 2.0 did have the facility to organise a synchronous discussion. However, on the one occasion a 'Live chat' session was planned technical difficulties prevented the ULRs from participating.

Figure 5-10. Phase 2.0 Glow 'Live chat'



Following the return to the discussion forum on the EIS website the question of holding a 'Live chat' was raised again. The first 'Live-chat' took place in January 2013. Phase 4.0 had enjoyed an initial flurry of activity, however, this had lessened to the extent that the community was moving towards entering a period of decline. The first synchronous 'Live-chat' was not specifically introduced to halt this decline but it did provide a serendipitous opportunity within the research to investigate the impact it would have on the community.

When analysing the ULRs who participated online what was notable was that there were three community members who participated in the synchronous 'Live-chats' who had never participated in the asynchronous discussions (i.e. they had been Lurkers). This finding suggested that the 'Live-chats' had a positive effect in encouraging members, including Lurkers and Novices, to participate online. However, while this then translated into further online activity in the asynchronous environment for one of the new members the other two only participated during the synchronous sessions. In terms of the wider

membership more ULRs participated in the second 'Live-chat' than the first. Three ULRs participated in the first 'Live-chat' but not the second. However, during semi-structured interviews they confirmed this was because of prior commitments and not because they were dissatisfied with the experience. Additionally a ULR who had not participated in the online forum at all (despite being a member for several years) indicated that they would be willing to participate in a synchronous chat in the future should the time suit and the purpose be of interest.

There were less technical queries during the second 'Live-chat' session. The obvious reason for this would be to assume that the ULRs had become more familiar with the synchronous environment and so were more able to engage with the questions rather than worrying about the process and technology. However, only 9 ULRs participated in the January 'Live-chat' compared with 22 for the second 'Live-chat' in March. From this it can be extrapolated that there were more inexperienced ULRs at the second 'Live-chat' than the first. This suggested that any change in the *nature* of the discussions that occurred during the 'Live-chat's was not directly linked to the membership role of the participants. Something else was the critical factor.

The main difference between the two 'Live-chat's was that for the second session the ULRs were issued with four questions to consider before the event. The first 'Live-chat' had higher levels of Socialisation and less critical discussion. This finding is comparable to the findings of Chen, Chen and Tsia (2009) in their study of web based professional development area for teachers. Chen *et al.* (2009) argued that the lack of wait time to consider the content of a post was a barrier to effective participation in a synchronous environment. By providing the ULRs with the specific questions that they would discuss

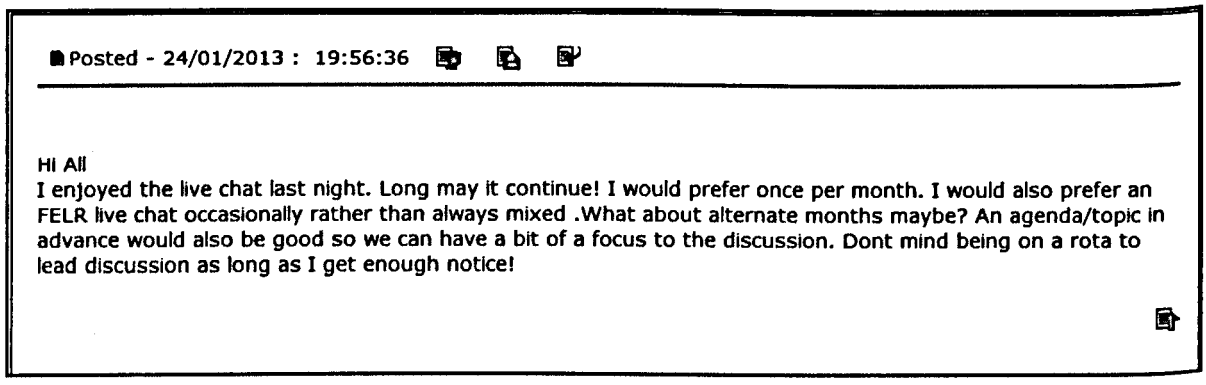
online in advance they had the opportunity to prepare, effectively overcoming the 'wait time' dilemma.

Research question three asked what strategies could facilitate the development of voluntary online teacher communities. Irriberi and Leroy (2009) had highlighted strategies that were important at different stages of their community Life-cycle model (Table 2-1). Evidence from the two synchronous chats, including increasing numbers of members and increased levels of activity (Section 4.21), suggested that synchronous chats could be a strategy to rejuvenate an online community in the decline stage. Or indeed to start a re-birth if the community had died as was seen with the ULRs. Preece (2006) argued that a shared purpose is important for the life of a community. It appeared that synchronous chats could be an effective tool to facilitate the creation of such a purpose. However, further investigation would be required to ensure this was not a temporary effect.

In summary, in answer to the research question regarding the strategies to facilitate the development of voluntary online teacher communities, then 'Live-chat' sessions had encouraged online activity. Novice ULRs were observed to post online for the first time during the 'Live-chat' session. Active ULRs with a more established history were also seen to engage (Section 4.21, Figure 4-82).

ULRs were willing to participate if the time suited but with a number of conditions attached. First, the 'Live-chat' had to have a clear and relevant purpose, preferably distributed in advance so they could decide if they would participate. Second, the 'Live-chat's should be interspersed throughout the academic year in between the offline (physical world) meetings (Figure 5-11).

Figure 5-11. ULR feedback from the first synchronous 'Live-chat' session



Previous analysis of the Phase 1.0 forum had shown that the offline (physical world) meetings stimulated online discussion (Section 4.7). This suggested that similar online 'Events' may also have a similar impact in the future.

The synchronous – asynchronous link also raised an interesting question regarding online participation. Can synchronous events be considered to be successful on their own merit or do they have to stimulate further asynchronous activity. This research was unable to answer this question based on the available data and would be something that would need further investigation to answer.

Chapter 6: Conclusions

This chapter begins by providing a brief summary of the thesis in Section 6.1. Section 6.2 outlines the contribution this research makes to the existing research base and proposes some new models to describe and explain online communities. Section 6.3 looks at the practical implications this research has for the sustainability of online communities. Finally, Section 6.4 makes recommendations and suggestions for future research areas.

6.1 SUMMARY OF THE THESIS

The research set out to investigate teacher's perceptions of Glow. The initial online survey of teachers' perceptions of Glow, in 2009, indicated that respondents were not engaging with it at this time. This prompted a refocusing of the research to look at the EIS ULR online community with a view to investigating how best we could describe and explain such a community of teachers. The subsequent research questions related to voluntary closed communities evolved from this focus:

1. How can we develop a model to describe a voluntary online teacher community?
2. How can we explain the practice of a voluntary online teacher community?
3. What strategies can facilitate the development of other voluntary online teacher communities?

A case study approach was adopted using a variety of methods including e-participant observations of their asynchronous discussion forums, questionnaires and interviews. The research built on previous work on member Life-cycle models and online community models in order to describe and analyse the online ULR community.

6.2 CONTRIBUTION TO KNOWLEDGE

During the course of this study three theoretical models were identified and tested to determine their suitability to answer the key research question of how we can describe a closed online community. These models were:

- A Unified member Life-cycle model to describe and explain the changing roles an individual may adopt within an online community.
- A Voluntary closed community Model to describe and explain the *nature* of the interactions taking place within an online community.
- And a Community Life-cycle Model to describe and explain the overall activity levels and changing membership within an online community.

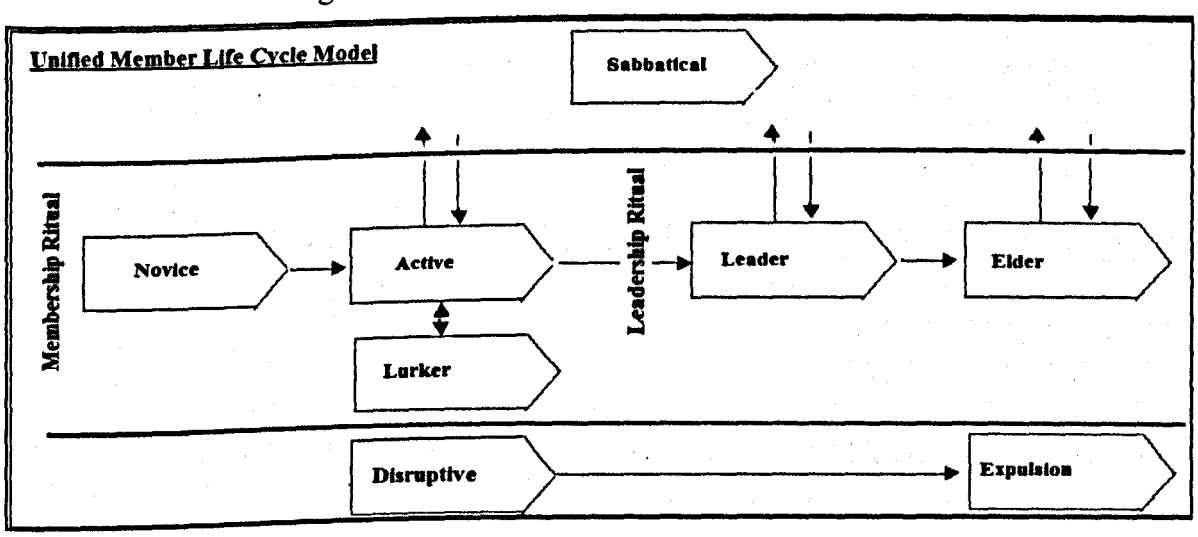
During the course of the research the models developed from the literature were subjected to testing and anomalies were identified in order to refine them before they could be presented as a contribution to the theoretical knowledge base of online communities and to answer the thesis research questions. Namely how we can describe and explain voluntary online teacher communities.

The initial framework for investigating member roles within the online ULR community and how they changed over time was based on an amalgamation of the models from Kim (2000) and Sonnenbichler (2009; 2012). During the literature review it became apparent that individually these models did not fully describe or explain the changing roles within a Voluntary closed community of Teachers. However, a revised Unified member Life-

cycle model that drew on elements from both was developed (Section 2.2) and then tested during the Case Study (Chapter 4).

However, during the course of the testing it became apparent that there were still problems with the model. The role of Troll did not appear to exist in a community with strict behavioural norms were everyone could be identified. Adopting a realistic approach that negative behaviour could not be ruled out in the future this role was amended to Disruptive. Thereby acknowledging the potential for an individual to cause trouble but indicating that, unlike in an open community were identification can be problematic, in a closed environment with clear consequences this was not such a problem. Expulsion was also included as a progression role. The role of Passive was split and renamed Lurker (to describe those that consumed but did not produce) and Sabbatical (to describe members who took a leave of absence). The model is presented below (Figure 6-2).

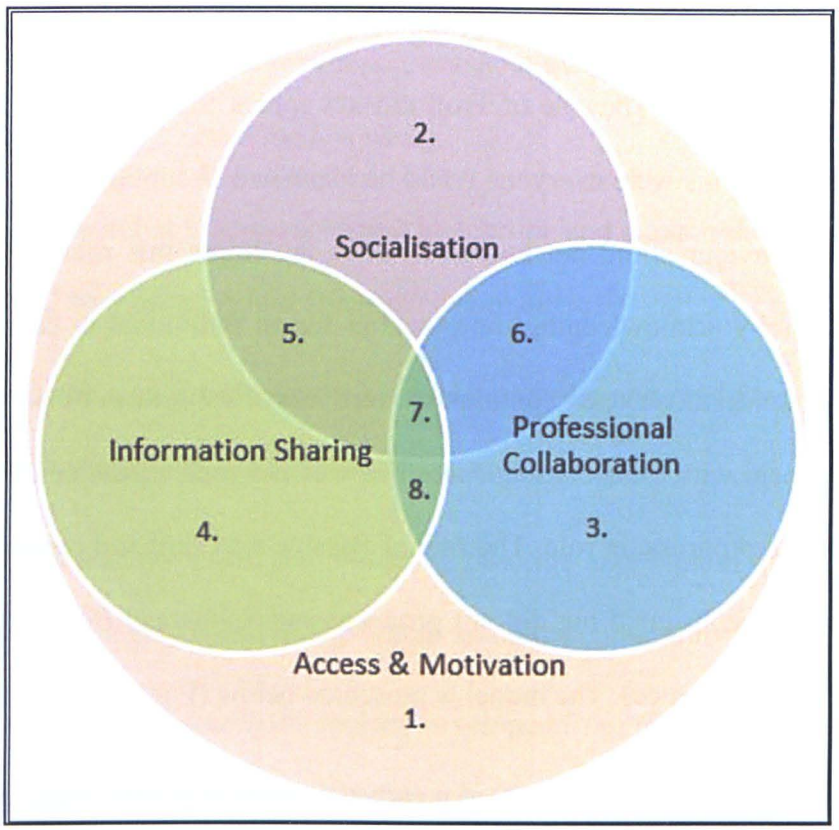
Figure 6-2. Unified member Life-cycle model



When applying Salmon's (2004) Five-stage model to an ongoing professional learning community it became apparent that the hierarchical nature of this approach did not fit with the more fluid nature of the ULR community. Consequently the model was adapted

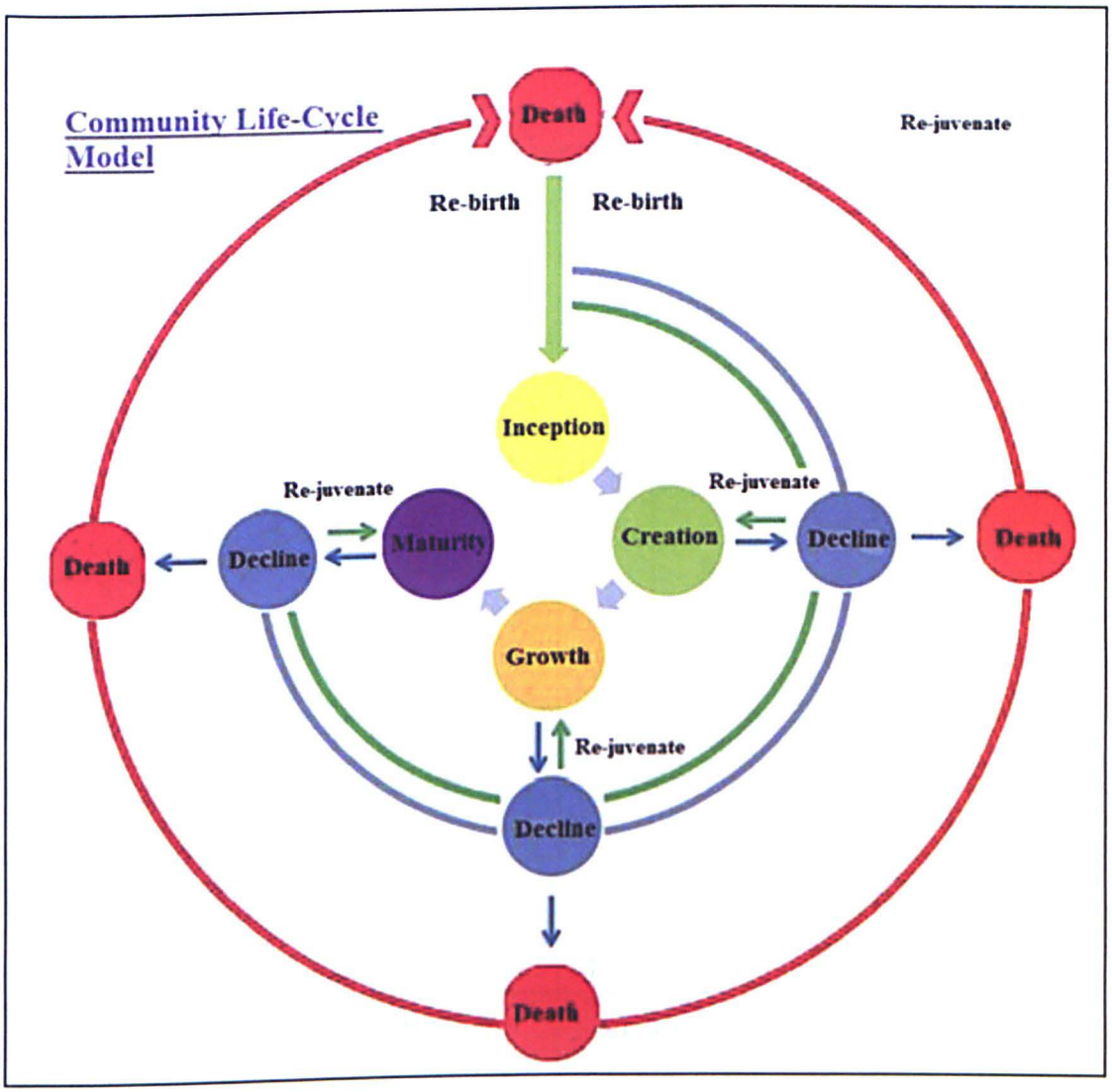
to a flat structure that acknowledged the emphasis on a need based approach to community involvement (Figure 6-3).

Figure 6-3. Voluntary closed community model



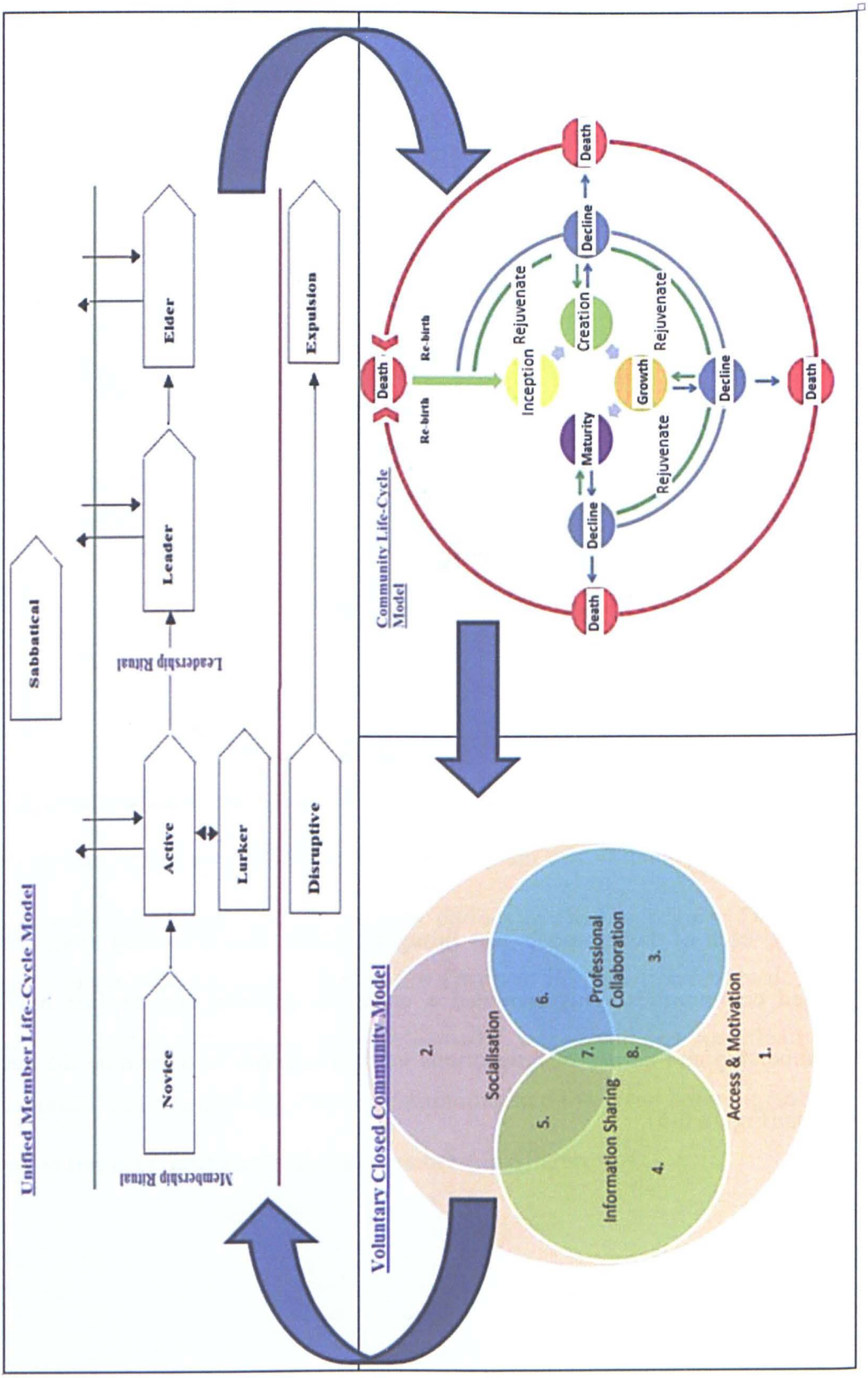
During the investigation into the ULR Life-cycle it was discovered that existing Life-cycle models (Iriberri and Leroy 2009) did not fully explain this voluntary closed online community. Namely their model did not describe periods of Decline prior to Death nor did it include a mechanism for such a Decline or Death to be halted or reversed. As a result of this an adapted Community Life-cycle model was developed specifically to provide a theoretical basis to identify a failing community and intervene before it reached a critical level in terms of online activity and membership (Figure 6-4).

Figure 6-4. Community Life-cycle model



Finally, each of these models was brought together into a Unified model for voluntary closed communities. This provided a model to describe and explain how the online membership and *nature* of interactions worked together to determine the success of the group (Figure 6-5).

Figure 6-5. Unified Model for voluntary closed communities.



6.3 PRACTICAL IMPLICATIONS OF THE RESEARCH FINDINGS

Critical to answering research question three was to determine what strategies could facilitate the development of voluntary online teacher communities at each stage of the community life-cycle. A number of practical implications can be drawn from the research findings that are particularly for Leaders of voluntary closed communities.

First, it was evident from the failed trial of the Glow technology that the importance of member privacy cannot be understated. If people are to invest in an online community they have to trust not just the people within their community but those that manage it. This underpinned every stage of the Life-cycle.

Closely linked to this the technology has to be fit for purpose. In order to ensure this at the Inception stage the community has to collectively agree on what that purpose is. This may help ensure that at the Creation stage of the community the technology is brought together to meet that purpose. Community members may not have the time to learn how to use technology so it helps if it is intuitive and works for them.

At the Growth stage it may be important that community Leaders ensure there is a balance of member roles. Leadership needs to be split between Staff and Volunteers. New members are important but so are experienced players. Leaders need to ensure that when managing a community they do not solely focus on community numbers but the roles adopted within that community.

The final practical implication from this research relates to the importance of online events and synchronous discussions at the Mature stage of a community life-cycle. Historically the asynchronous discussions were seen as being advantageous in that individuals could go online at a time and place that suited them. However, in a long running community the

need to go online and find solutions can diminish resulting in lower activity levels. Creating a synchronous online event (even in communities without this history) can create a shared purpose for individuals to go online and reconnect. This strategy has the potential to rejuvenate the community and avoid it slipping into Decline. Synchronous discussions are more likely to be effective when the participants are given clear direction on the focus of the discussion before the event. This provides the participants with an opportunity to prepare and overcomes the 'wait-time' dilemma.

6.4 RECOMMENDATIONS FOR FUTURE RESEARCH

This research was limited to exploring a closed online community of ULRs who used their discussion forum to develop their professional practice. The nature of this community did influence the results of this study and it should be noted that the findings may not be relevant to open communities with a more diverse membership.

This research has presented four alternative models to describe online communities:

- Unified membership Life-cycle model.
- Voluntary closed community model.
- Online community Life-cycle model.
- Unified model for voluntary closed communities.

It is recommended that further testing of these models is required to determine if they could apply to other teacher communities, both closed and open. Following confirmation of the models it is suggested that further research is conducted to determine if their application within an online community can promote growth and prevent community decline by identifying members not actively engaged. It is also suggested that further research is undertaken on the impact of the introduction of synchronous events as a strategy to rejuvenate online communities in a period of decline.

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Word Count: 49 943.

Appendices

Appendix 1: Glow Survey

Subject: ICT and GLOW, what impact do they have on your teaching?

Dear Colleague

Allow me to introduce myself, my name is Vicki Wallace and I am currently employed as a Support for Learning Teacher in Midlothian and have just started my Doctorate in Education with The Open University. The focus of my research is looking at the impact that GLOW will have on teacher's identity and professional practice. I would be very grateful if you could fill in the attached questionnaire. It should take approximately 20 minutes to complete.

Please follow the link below to complete the online survey or email the completed questionnaire as an attachment to myself. Alternatively a small supply of paper copies has been left at your school.

Most of the questions ask you to indicate specific responses. There is a section at the end to provide additional comments. Longer answers can provide very valuable insights but I recognise that not everyone will have the time or inclination to add details.

I am hoping to follow up this survey with interviews and reflective diaries looking further at teachers' experience of ICT and GLOW and what teachers perceive to be the important issues. I am interested in speaking to teachers who have both positive and negative views on the impact that ICT in general and GLOW in particular can have on the Scottish Educational System. The reflective diaries would be an opportunity for teachers who are willing and are using GLOW to record their experience. There is a section at the end of the survey to indicate if you would are interested in being involved in this aspect of the study and require further information. Asking for information does not automatically mean that you have to continue to participate

I am afraid I am unable to offer any rewards for taking part, but I will send a copy of any resulting publication to anyone who indicates that they would be interested in receiving this.

Thank you very much in advance for taking part in this study, which will help us understand the experience of teachers in Scotland as we implement GLOW.

Regards

Vicki Wallace (v.wallace@mgfl.net)
Lasswade High School Centre

Anonymity and confidentiality.
Your identity will remain confidential. It is my intention to aggregate the data in order to gain a representative picture which I hope to write up as part of my academic thesis. This may also appear as an academic article and be presented at academic conferences. In reporting this study I may quote from individual responses but if I do so it will be done so anonymously. I will ensure there is no means of identifying the individual participant. You are free to miss out any questions you are not comfortable with. You may also contact me at any point after returning the survey to request your data is removed. I will comply with requests up to the point at which data has been aggregated for analysis. No data will be passed to any third party. I will ensure full compliance with the Data Protection Act and all data will be destroyed on completion of the study.

PART A- Your Teaching experience and Context

1. How many years teaching experience do you have?

-] 0-3 years
-] 4-7 years
-] 8-15 years
-] 16-23 years
-] 24-30 years
-] 31+ years

2. What is your current post?

- ☐ Class teacher
- ☐ Principal Teacher
- ☐ Chartered Teacher
- ☐ Senior Management

3. Which sector do you currently teach in?

- ☐ Nursery
- ☐ Primary
- ☐ Secondary
- ☐ Special Needs

3b. If you work in the secondary sector what subject(s) do you teach? .....

4. What is the approximate roll of your current school?

- ☐ 120 or less
- ☐ 121-300
- ☐ 301-600
- ☐ 601-1000
- ☐ More than 1000

5. Which local authority do you work for?

.....

5. Please indicate which of the ICT resources listed below are <u>available</u> for use at your current school and whether you have <u>used</u> them.
If you have used a resource, please **also** indicate whether you found it to be <u>easily available for use when required.</u>

ICT Resource	Is it available? Yes	No	If so have you used it? Yes	No	Was it easily available? Yes	No
Desktop/laptop computers for personal use	☐	☐	☐	☐	☐	☐
Personal email account	☐	☐	☐	☐	☐	☐
Internet	☐	☐	☐	☐	☐	☐
Printer	☐	☐	☐	☐	☐	☐
Digital cameras	☐	☐	☐	☐	☐	☐
Scanner	☐	☐	☐	☐	☐	☐
Interactive white board	☐	☐	☐	☐	☐	☐
Digital projectors	☐	☐	☐	☐	☐	☐
Specialist software applications (e.g. CAD)	☐	☐	☐	☐	☐	☐
Technical support	☐	☐	☐	☐	☐	☐
Desktop computers for student use in your classroom	☐	☐	☐	☐	☐	☐
Desktop computers for student use elsewhere at school (e.g. computer lab)	☐	☐	☐	☐	☐	☐
Laptop computers for student use	☐	☐	☐	☐	☐	☐
Hand held gaming devices e.g Nintendo DS	☐	☐	☐	☐	☐	☐
GLOW	☐	☐	☐	☐	☐	☐

6. Please indicate the extent to which you agree or disagree with each statement.

Use of ICT at school	Strongly agree	Agree	Disagree	Strongly disagree
My school has a clear sense of direction in how to use ICT to enhance the learning of students	☐	☐	☐	☐
My school encourages the use of ICT by all teachers and puts strategies in place for everyone	☐	☐	☐	☐
The use of ICT is encouraged in the teaching and learning of students at my school and appropriate access and support is provided	☐	☐	☐	☐
Teachers at my school are encouraged and supported in participating in professional learning opportunities	☐	☐	☐	☐
ICT is used to monitor, evaluate and report on student achievement at my school	☐	☐	☐	☐
Sufficient ICT resources are available to meet the ICT requirement of teachers and students	☐	☐	☐	☐
My school has a clear sense of direction in how to use GLOW to enhance the learning of students	☐	☐	☐	☐

7. Please indicate whether you have undertaken professional development in any of the ICT areas listed below. If so, please indicate whether you found it to be effective?

Professional Development	Have you undertaken it? Yes	No	Was it effective? Yes	No
Training in the use of computers / basic computers	☐	☐	☐	☐
Word processing (eg MSWord)	☐	☐	☐	☐
Spreadsheets (eg EXCEL)	☐	☐	☐	☐
Presentation software (eg PowerPoint)	☐	☐	☐	☐
Databases (eg Access)	☐	☐	☐	☐
Training on how to integrate technology within the curriculum	☐	☐	☐	☐
GLOW	☐	☐	☐	☐

8 Please estimate how often you use ICT to achieve the listed personal/professional objectives.

Statement about ICT	Daily	Weekly	At least once per term	Never
Create materials for students use (eg handouts, tests)	☐	☐	☐	☐
Access research and best practice for teaching	☐	☐	☐	☐
Curriculum administration (eg planning, reporting)	☐	☐	☐	☐
Communicate with colleagues and other professionals	☐	☐	☐	☐
Communicate with student(s) and/or students parents(s)	☐	☐	☐	☐
Post information to a website to assist your students in their work	☐	☐	☐	☐
Access GLOW	☐	☐	☐	☐
Online professional learning	☐	☐	☐	☐

9. As you think about your classroom, select the box next to each statement to indicate how much you disagree or agree with the statement, responses range from 1 (*strongly disagree*) to 6 (*strongly agree*)

Statement	**Strongly Diagree**					**Strongly Agree**
	1	**2**	**3**	**4**	**5**	**6**
It is important that I establish classroom control before I become too friendly with students	☐	☐	☐	☐	☐	☐
I believe that expanding on students' ideas is an effective way to build my curriculum	☐	☐	☐	☐	☐	☐
I prefer to cluster students' desks or use tables so they can work together	☐	☐	☐	☐	☐	☐
I invite my students to create many of my bulletin boards	☐	☐	☐	☐	☐	☐
I like to make curriculum choices for students because they can't know what they need to learn	☐	☐	☐	☐	☐	☐
I base student grades primarily on homework, quizzes and tests	☐	☐	☐	☐	☐	☐
An essential part of my teacher role is supporting a student's family when problems are interfering with a student's learning	☐	☐	☐	☐	☐	☐
To be sure that I teach students all necessary content and skills, I follow a textbook or workbook	☐	☐	☐	☐	☐	☐
I teach subjects separately, although I am aware of the overlap of content and skills.	☐	☐	☐	☐	☐	☐
I involve students in evaluating their own work and setting their own goals.	☐	☐	☐	☐	☐	☐
When there is a dispute between students in my classroom, I try to intervene immediately to resolve the problem	☐	☐	☐	☐	☐	☐
I believe students learn best when there is a fixed schedule	☐	☐	☐	☐	☐	☐
I make it a priority in my classroom to give students time to work together when I am not directing them.	☐	☐	☐	☐	☐	☐
I make it easy for parents to contact me at school	☐	☐	☐	☐	☐	☐
For assessment purposes, I am interested in what students can do independently	☐	☐	☐	☐	☐	☐
I invite parents to volunteer in or visit my classroom almost any time	☐	☐	☐	☐	☐	☐
I generally use the teacher's guide to lead class discussions of a story or text	☐	☐	☐	☐	☐	☐
I prefer to assess students informally through observation and conferences	☐	☐	☐	☐	☐	☐
I find that textbooks and other published materials are the best sources for creating my curriculum	☐	☐	☐	☐	☐	☐
It is more important for students to learn to obey rules than to make their own decisions	☐	☐	☐	☐	☐	☐
I often create thematic units based on the students' interests and ideas	☐	☐	☐	☐	☐	☐

PART B- ICT and your Professional Practice.

10. How would you describe the impact that ICT has made on your professional context?

- ☐ Negative impact
- ☐ No impact
- ☐ Positive impact

11. How would you describe the impact that ICT has made on your students learning?

- ☐ Negative impact
- ☐ No impact
- ☐ Positive impact

12. Please indicate the extent to which you agree or disagree with each statement about ICT.

Statement about ICT	Strongly agree	Agree	Disagree	Strongly disagree
Student use of ICT has the capacity to strongly support student-centred, inquiry based learning	☐	☐	☐	☐
ICT provides valuable resources and tools to support student learning	☐	☐	☐	☐
ICT provides students with efficient presentation and communication tools	☐	☐	☐	☐
ICT has limited capacity to provide benefits in the classroom	☐	☐	☐	☐
I like the challenge of exploring technology and new software and its possibilities	☐	☐	☐	☐
GLOW has the potential to strongly support student-centred, inquiry based learning	☐	☐	☐	☐

13. Below is a list of statement about the extent to which you apply ICT within your teaching practice. Please choose the one description that best describes your situation
In my current teaching, ICT is:

- ☐ Having an extensive impact on what students learn and how they learn
- ☐ A useful resource impacting on some areas of the curriculum
- ☐ Improving student skills in the use of ICT
- ☐ Having little impact on student learning
- ☐ Not applicable to my role

14. If you do not feel ICT is a suitable resource within the classroom please indicate why (please tick all the appropriate boxes then go to PART C).

- ☐ Not accessible when needed
- ☐ Lack of ICT skills and experience
- ☐ Not appropriate to subject
- ☐ Lack of technical support
- ☐ Unreliability of ICT
- ☐ Lack of time within curriculum

15. Where do you generally use ICT resources? (please tick all that apply)

- ☐ Classroom
- ☐ Computer laboratory
- ☐ Home
- ☐ Library
- ☐ Other

16. Please indicate how frequently factors out with your control restrict your use of ICT. Factors include things like condition of equipment, access to equipment, technical support etc

- ☐ Daily
- ☐ Weekly
- ☐ At least one a term
- ☐ Never

17. Please estimate how often you incorporate student use of ICT to achieve the following learning outcomes.

Learning outcomes	Daily	Weekly	At least once per term	Never
Mastering skills just taught	☐	☐	☐	☐
Remediation of skills not learned well	☐	☐	☐	☐
Expressing themselves clearly	☐	☐	☐	☐
Communicating with other people	☐	☐	☐	☐
Finding out about ideas and information	☐	☐	☐	☐
Analysing information	☐	☐	☐	☐
Presenting information to an audience	☐	☐	☐	☐
Improving computer skills	☐	☐	☐	☐
Learning to work collaboratively	☐	☐	☐	☐

PART C- Factors that would enable the use of ICT.

10. Which of the following factors have been most successful (or would be successful) in encouraging you as a teacher to regularly integrate the use of ICT into your day to day teaching? (please tick all that apply)

- ☐ Access to own personal laptop / computer
- ☐ High quality resources available
- ☐ Full access to software and hardware at all times
- ☐ High level of technical support
- ☐ Access to an interactive whiteboard
- ☐ Good quality CPD
- ☐ Other (please state)

.....

11. Which of the following whole school factors have been most successful (or would be successful) in encouraging you as a teacher to regularly integrate the use of ICT into your day to day teaching? (please tick all that apply)

- On site technical support
- Programme of staff ICT training / CPD
- Support / ICT vision from SMT
- Whole school policy on using ICT across the curriculum
- Access to ICT resources / interactive whiteboards.
- Other (please state)

.....

PART D- ICT and GLOW.

12. Do you have access to GLOW in your current teaching post? ☐ Yes ☐ No

13. Please indicate if you have access to and have used the following components of GLOW. How would you rate your skills with regards to using GLOW's tools in your teaching?

Component	Do you have access?		Would/have you used this?		How do you rate your skills?		
	Yes	No	Yes	No	Novice	Competent	Expert
GLOW group (an area which connects people and ideas through communities of interest)	☐	☐	☐	☐	☐	☐	☐
GLOW mail	☐	☐	☐	☐	☐	☐	☐
GLOW meet (web conferencing tool)	☐	☐	☐	☐	☐	☐	☐
GLOW learn (virtual learning environment)	☐	☐	☐	☐	☐	☐	☐
GLOW messenger (electronic messaging service that allows users to exchange text messages with others online immediately)	☐	☐	☐	☐	☐	☐	☐
GLOW chat (moderated chat room)	☐	☐	☐	☐	☐	☐	☐

14 Please indicate the extent of the impact to which you feel the following GLOW components will have (or have had) on your teaching.

Component	Significant impact	Some Impact	Limited Impact	No impact
GLOW group (an area which connects people and ideas through communities of interest)	☐	☐	☐	☐
GLOW mail	☐	☐	☐	☐
GLOW meet (web conferencing tool)	☐	☐	☐	☐
GLOW learn (virtual learning environment)	☐	☐	☐	☐
GLOW messenger (electronic messaging service that allows users to exchange text messages with others online immediately)	☐	☐	☐	☐
GLOW chat (moderated chat room)	☐	☐	☐	☐

16. Aside from a lack of availability , if you do not feel GLOW is a suitable resource within the classroom please indicate why (please tick all the appropriate boxes).

- ☐ Lack of ICT skills and experience to make use of components
- ☐ Lack of confidence
- ☐ Not appropriate to subject
- ☐ Lack of technical support
- ☐ Unreliability of ICT
- ☐ Lack of time within curriculum
- ☐ Unsure of how it can be integrated into the curriculum.

17. What type of CPD do you feel you would be most appropriate to enable you to implement GLOW in your classroom?

- ☐ Local authority training courses
- ☐ Outside agency provided training courses
- ☐ In-school mentoring / support
- ☐ Personal research / study
- ☐ Other (please state)

.....

OTHER COMMENTS

Please use this space for any additional comments (e.g. what you feel would encourage your use of ICT and GLOW in the classroom; anything you feel discourages you from using ICT and GLOW)

NEXT STEPS ....

I am hoping to follow up this survey with interviews and reflective diaries looking further at teachers' experience of ICT and GLOW and what teachers perceive to be the important issues. I am interested in speaking to teachers who have both positive and negative views on the impact that ICT in general and GLOW in particular can have on the Scottish Educational System.

Would you be prepared to take part in these interviews or to keep a diary? If so, please tick the box below, providing your name and contact details.

- ☐ I am interested in taking part in the interviews.
- ☐ I am interested in keeping a reflective diary.
- ☐ I would like more information about either / both.

Name:

E-mail:

Contact Details:

Thank you very much for your assistance.

Vicki Wallace

Appendix 2: List of survey constructs and corresponding items

Construct	Item	Question	Ques No.
Teacher Beliefs TB (taken from Wooley *et al* 2004)		As you think about your classroom, select the box next to each statement to indicate how much you disagree or agree with the statement, responses range from 1 (strongly disagree) to 6 (strongly agree)	A11
	TB1	It is important that I establish classroom control before I become too friendly with students **(Trad)**	
	TB2	I believe that expanding on students' ideas is an effective way to build my curriculum **(Const)**	
	TB3	I prefer to cluster students' desks or use tables so they can work together **(Const)**	
	TB4	I invite my students to create many of my bulletin boards **(Const)**	
	TB5	I like to make curriculum choices for students because they can't know what they need to learn **(Trad)**	
	TB6	I base student grades primarily on homework, quizzes and tests **(Trad)**	
	TB7	An essential part of my teacher role is supporting a student's family when problems are interfering with a student's learning **(Const)**	
	TB8	To be sure that I teach students all necessary content and skills, I follow a textbook or workbook **(Trad)**	
	TB9	I teach subjects separately, although I am aware of the overlap of content and skills. **(Trad)**	
	TB10	I involve students in evaluating their own work and setting their own goals **(Const)**	
	TB11	When there is a dispute between students in my classroom, I try to intervene immediately to resolve the problem **(Trad)**	
	TB12	I believe students learn best when there is a fixed schedule **(Trad)**	
	TB13	I make it a priority in my classroom to give students time to work together when I am not directing them **(Const)**	
	TB14	I make it easy for parents to contact me at school **(Const)**	
	TB15	For assessment purposes, I am interested in what students can do independently **(Trad)**	
	TB16	I invite parents to volunteer in or visit my classroom almost any time **(Const)**	
	TB17	I generally use the teacher's guide to lead class discussions of a story or text **(Trad)**	
	TB18	I prefer to assess students informally through observation and conferences **(Const)**	
	TB19	I find that textbooks and other published materials are the best sources for creating my curriculum **(Trad)**	
	TB20	It is more important for students to learn to obey rules than to make their own decisions **(Trad)**	
	TB21	I often create thematic units based on the students' interests and ideas **(Const)**	

Construct	Item	Question	Ques No.
Accessibility and availability of ICT resources ACS		Please indicate which of the ICT resources listed below are available for use at your current school and whether you have used them. If you have used a resource, please also indicate whether you found it to be easily available for use when required.	A7
	ACS1	Desktop/laptop computers for personal use	
	ACS2	Personal email account	
	ACS3	Internet	
	ACS4	Printer	
	ACS4	Digital cameras	
	ACS5	Scanner	
	ACS6	Interactive white board	
	ACS7	Digital projectors	
	ACS8	Specialist software applications (e.g. CAD)	
	ACS9	Technical support	
	ACS10	Desktop computers for student use in your classroom	
	ACS11	Desktop computers for student use elsewhere at school (e.g. computer lab)	
	ACS12	Laptop computers for student use	
	ACS13	Hand held gaming devices e.g Nintendo DS	
	ACS14	GLOW	
Frequency/Type of student computer use SCU (adapted from Tondeur, *et al* 2008)	SCU1	Mastering skills just taught **(learning tool)**	B8
	SCU2	Remediation of skills not learned well **(learning tool)**	
	SCU3	Expressing themselves clearly **(computer skills)**	
	SCU4	Finding out about ideas and information **(information tool)**	
	SCU5	Analysing information **(information tool)**	
	SCU6	Presenting information to an audience **(communication + collab)**	
	SCU7	Improving computer skills **(computer skills)**	
	SCU8	Learning to work collaboratively **(communication + collab)**	
Frequency/Type of teacher computer use TCU (adapted from Molyneux, 2007; Tondeur *et al* 2008)		Please estimate how often you use ICT to achieve the listed personal/professional objectives.	A10
	TCU1	Create materials for students use (eg handouts, tests) **(admin tool)**	
	TCU2	Access research and best practice for teaching **(cpd)**	
	TCU3	Curriculum administration (eg planning, reporting) **(admin tool)**	
	TCU4	Communicate with colleagues and other professionals **(communication)**	
	TCU5	Communicate with student(s) and/or students parents(s) **(communication)**	
	TCU6	Post information to a website to assist your students in their work **(collaboration)**	
	TCU7	Access GLOW **(collaboration)**	
	TCU8	Online professional learning **(cpd)**	

Construct	Item	Question	Ques No.
Teacher ICT professional development CPD (adapted from Government Western Australia, 2005; BECTA, 2009)		Please indicate whether you have undertaken professional development in any of the ICT areas listed below. If so, please indicate whether you found it to be effective?	A9
	CPD1	Training in the use of computers / basic computers	
	CPD2	Word processing (eg MSWord)	
	CPD3	Spreadsheets (eg EXCEL)	
	CPD4	Presentation software (eg PowerPoint)	
	CPD5	Databases (eg Access)	
	CPD6	Training on how to integrate technology within the curriculum	
	CPD7	GLOW	
	CPD8	What type of CPD do you feel you would be most appropriate to enable you to implement GLOW in your classroom? □ Local authority training courses □ Outside agency provided training courses □ In-school mentoring / support □ Personal research / study □ Other (please state)	D5
School vision for use ICT for teaching and learning SV (adapted from Tondeur *et al* 2009)		Please indicate the extent to which you agree or disagree with each statement	A8
	SV1	My school has a clear sense of direction in how to use ICT to enhance the learning of students	
	SV2	My school encourages the use of ICT by all teachers and puts strategies in place for everyone	
	SV3	The use of ICT is encouraged in the teaching and learning of students at my school and appropriate access and support is provided	
	SV4	Teachers at my school are encouraged and supported in participating in professional learning opportunities	
	SV5	ICT is used to monitor, evaluate and report on student achievement at my school	
	SV6	Sufficient ICT resources are available to meet the ICT requirement of teachers and students	
	SV7	My school has a clear sense of direction in how to use GLOW to enhance the learning of students	
	SV8	Which of the following whole school factors have been most successful (or would be successful) in encouraging you as a teacher to regularly integrate the use of ICT into your day to day teaching? (please tick all that apply) □ On site technical support □ Programme of staff ICT training / CPD □ Support / ICT vision from SMT □ Whole school policy on using ICT across the curriculum □ Access to ICT resources / interactive whiteboards. □ Other (please state)	C1

Construct	Item	Question	Ques No.
Teacher vision for use ICT for teaching and learning TV – links to perceived usefulness PU (adapted from Government Western Australia, 2005; Tondeur *et al* 2008)		Please indicate the extent to which you agree or disagree with each statement about ICT.	B3
	TV1	Student use of ICT has the capacity to strongly support student-centred, inquiry based learning	
	TV2	ICT provides valuable resources and tools to support student learning	
	TV3	ICT provides students with efficient presentation and communication tools	
	TV4	ICT has limited capacity to provide benefits in the classroom	
	TV5	I like the challenge of exploring technology and new software and its possibilities	
	TV6	GLOW has the potential to strongly support student-centred, inquiry based learning	
	TV7	Which of the following factors have been most successful (or would be successful) in encouraging you as a teacher to regularly integrate the use of ICT into your day to day teaching? (please tick all that apply) □ Access to own personal laptop / computer □ High quality resources available □ Full access to software and hardware at all times □ High level of technical support □ Access to an interactive whiteboard □ Good quality CPD □ Other (please state)	C2
Impact ICT on learning and teaching in the classroom IMP (adapted from Government Western Australia, 2005)	IMP1	How would you describe the impact that ICT has made on your students learning? □ Negative impact □ No impact □ Positive impact	B2
	IMP2	How would you describe the impact that ICT has made on your professional context? □ Negative impact □ No impact □ Positive impact	B1
	IMP3	Below is a list of statement about the extent to which you apply ICT within your teaching practice. Please choose the one description that best describes your situation In my current teaching, ICT is: □ Having an extensive impact on what students learn and how they learn □ A useful resource impacting on some areas of the curriculum □ Improving student skills in the use of ICT □ Having little impact on student learning □ Not applicable to my role	B4

Construct	Item	Question	Ques No.
Barriers to ICT and GLOW BAR (adapted from Ertmer, 1999)	BAR1	If you do not feel ICT is a suitable resource within the classroom please indicate why (please tick all the appropriate boxes then go to PART C). □ Not accessible when needed □ Lack of ICT skills and experience □ Not appropriate to subject □ Lack of technical support □ Unreliability of ICT □ Lack of time within curriculum	B5
	BAR2	Please indicate how frequently factors out with your control restrict your use of ICT. Factors include things like condition of equipment, access to equipment, technical support etc □ Daily □ Weekly □ At least one a term □ Never	B7
	BAR3	Aside from a lack of availability , if you do not feel GLOW is a suitable resource within the classroom please indicate why (please tick all the appropriate boxes). □ Lack of ICT skills and experience to make use of components □ Lack of confidence □ Not appropriate to subject □ Lack of technical support □ Unreliability of ICT □ Lack of time within curriculum □ Unsure of how it can be integrated into the curriculum.	D4

Appendix 3: Case Study Protocol

Background and justifications

The EIS is the largest teaching Union in Scotland, they started the Union Learning program back in 2003 as a response to the agreement reached following the McCrone Report (Alexandrou, 2007). ULRs were created to support the Continuing Professional Development (CPD) of their colleagues. The EIS have ULRs across Scotland who have communicated online since their inception. The rational for selecting participants from a single community with a history of online communication was that this would increase the likelihood that the data obtained would provide answers to the research questions.

Objectives and research questions

Following the finding from the initial survey that teachers were making little use of Glow (irrespective of their beliefs) the objective of the research changed to look at teachers who were using online communication, to develop our understanding of how to foster such online teacher engagement. The following research questions evolved from this focus:

1. How can we develop a model to describe a voluntary online teacher community?
2. How can we explain the practices of a voluntary online teacher community?
3. What strategies can facilitate the development of voluntary online teacher communities?

It was anticipated that the results of this study would be used to create a set of guidelines that could be used to support other online communities of practice.

Methods

A single-explanatory case study approach was adopted. A participant selection model was adopted to ensure the community studied was more likely to produce data that could address the research questions. The critical case selected was the Educational Institute of Scotland's (EIS) Union Learning Representatives' (ULRs) because of their established use of online communications.

The following research methods used included: online observations of the ULR forums, questionnaires and semi-structured interviews

Data Analysis Plan

Data collection and analysis began with the online forum. The unit of analysis was the single post. Each post was coded for who was talking (community role), focus of discussion and the nature of the discussion. Questions raised by the observations were explored through questionnaires and interviews. Coding lists were utilised throughout, where possible drawn from existing literature.

Ethical considerations

The research was informed by the BERA guidelines of informed consent. Ethical approval for the study was obtained from The Open University Human participants and materials Ethics committee. Potential participants were informed of the research through meetings and information sheets. Participants were given a consent form to complete if they wish to

be involved in the research. A participant could withdraw from the study and their data withdrawn from the study. All data was anonymised. As practitioner led research a significant ethical consideration was that of coercion.

Appendix 4: Case Study Coding Lists

Codes for Focus of Each Post

Categories of Primary Code & Sub-codes	Description
Socialisation	**Social discussion not directly related to ULR role or work**
Novice post	First posting
Welcome	Discussion welcoming new ULRs to the community
ULR meetings	**Related to a Face-to-face ULR meeting**
Meeting organisation	Administration of attendance at face-to-face ULR meeting
Meeting socialisation	Social discussion following a face-to-face ULR meeting
Meeting discussions	Discussions looking at issues raised during a face-to-face ULR meeting
ULR role	**Discussions setting out the parameters of the role. What ULRs should do, who they should be in contact with. Facility time allocated to perform ULR role. ULR evaluation, ULR recruitment**
CPD Event	Event for teachers organised by ULRs in partnership with Local Authorities
Use of forum	Discussions relating to how ULRs should use forum
Members	How to make and sustain contacts with EIS members
Knowledge base	Knowledge of CPD providers etc. required to carry out role
Resources	Resources created to support ULRs in their role
National Policy	**Discussion of national policies**
Chartered Teacher	Discussions about Chartered Teachers
Glow	Discussions about Glow (other than those related specifically to the ULR Forum)

Codes for Nature of Discussion in each Post

Category	Description
Asking Question	Administrative
	Questions drawn from real world example (own experience)
	Looking for resources
Answering Question	Straight and in detail
	With real world examples (from own experience)
	With tips
	With justification
Sharing experience & knowledge	Updating community on experiences and knowledge
Asking for feedback	Looking for verification on action undertaken
Providing feedback	Responding to a feedback request
Clarification	Explaining a post so the meaning is understood
Critical discussion of contribution	Agreement or disagreement with a post but crucially providing an explanation for the stance taken
Socialisation	Off topic discussion not related to focus of post

Appendix 5: EIS ULR Questionnaire (April 2011)

EIS Learning Rep survey — Exit this survey

1. Welcome

Dear Colleague

If you wish to comment on anything that you feel I have left out then please feel free to do so. A box is made available at the end of the survey. I would like to assure you that all data will be stored securely and will be anonymised. This research will be conducted in compliance with the Data Protection Act and The British Educational Research Association Ethical Guidelines. This survey should take approximately 15 minutes to complete.

Thank you

Vicki Wallace

***1. By clicking on the yes button you are agreeing for your data to be used as part of my EdD research**

- ○ Yes
- ○ No

EIS Learning Rep survey — Exit this survey

2. Your Experience as a Learning Representative

***1. Which Local Authority do you work for?**

FE College (please specifiy)

***2. In what capacity do you serve as an EIS Learning Representative?**

***3. How long have you held this position?**

***4. Did you use the original online platform on the EIS website?**

- ○ Yes
- ○ No

EIS Learning Rep survey

Exit this survey

3. Original EIS online site

*1. On average roughly how often did you visit the original online group?

- ○ Daily
- ○ Weekly
- ○ Monthly
- ○ Once a term

*2. What was the main purpose of your visits? (Tick all that apply)

- ☐ Get information to answer a specific query
- ☐ Own professional development
- ☐ Share resources
- ☐ Network with colleagues
- ☐ Browsing
- ☐ Collaborate on a shared project

Other (please specify)

*3. How would you rate your overall satisfaction with the original online group

- ○ Very Satisfied
- ○ Somewhat satisfied
- ○ Neutral
- ○ Somewhat dissatisfied
- ○ Very dissatisfied

*4. Please rate your satisfaction with the following areas

	Very satisfied	Somewhat satisfied	Neutral	Somewhat dissatisfied	Very dissatisfied
Ease of log on process	○	○	○	○	○
Lay out and design	○	○	○	○	○
Ease of navigation	○	○	○	○	○
Accurcet of information	○	○	○	○	○
Usefulness of information	○	○	○	○	○
Quality of discussions	○	○	○	○	○
Quantity of discussions	○	○	○	○	○
Quality of content	○	○	○	○	○
Quantity of content	○	○	○	○	○
Freshness of content	○	○	○	○	○

*5. The original online group was fit for purpose

- ○ Strongly agree
- ○ Somewhat agree
- ○ Neutral
- ○ Somewhat disagree
- ○ Strongly disagree

6. Please feel free to comment on any other aspect of the originial online community.

EIS Learning Rep survey

Exit this survey

4. Staff development you have experienced in relation to glow

***1. Which of the following most closely matches your level of expertise in using Glow?**

- ○ Expert
- ○ Competent
- ○ Novice

***2. What staff development have you undertaken that has enabled you to use glow?**

- ☐ Attendance at a training course
- ☐ Observation of a more expereinced colleague
- ☐ Involvement with a glow related development activity
- ☐ Participation in a formal / informal study group
- ☐ Engaged with a piece of action research
- ☐ Set your own personal goals and related self-directed learning
- ☐ Mentored by a more expereinced colleague
- ☐ Training associated with glow mentor / champion role
- ☐ None

Other (please specify)

***4. How would you rate your overall satisfaction with the staff development you expereinced in relation to glow**

- ○ Very Satisfied
- ○ Somewhat satisfied
- ○ Neutral
- ○ Somewhat dissatisfied
- ○ Very dissatisfied

***5. To what extent do you feel the staff development you were provided with enabled you to use glow?**

***6. How could this staff development have been improved?**

7. Please feel free to comment on aspect of staff development in relation to glow

EIS Learning Rep survey

Exit this survey

5. Your EIS glow group

This part of the survey is specifically asking you about your EIS glow group and not others you may be a part of.

***1. On average how easy is it for you to access the EIS glow group?**

- ○ No problems
- ○ Occasional difficulties
- ○ Frequently
- ○ Unable to access

***2. Describe the purpose of your glow group?**

***3. Why do you visit the EIS glow group? (Tick all that apply)**

- [ ] Get information to answer a specific query
- [ ] Own professional development
- [ ] Share resources
- [ ] Network with colleagues
- [ ] Browsing
- [ ] Collaborate on a shared project
- [ ] Prompted to visit by an email from EIS HQ regarding specific information

Other (please specify)

***4. How long have you been a member of the glow group?**

- ○ Less than 6 months
- ○ 6 months to 1 year
- ○ 1 year to 2 years
- ○ Longer than 2 years
- ○ Not sure

***5. On average roughly how often do you visit your glow group?**

○ Daily ○ Weekly ○ Monthly ○ Once a term

***6. How would you rate your overall satisfaction with your glow group**

○ Very Satisfied ○ Somewhat satisfied ○ Neutral ○ Somewhat dissatisfied ○ Very dissatisfied

***7. Please rate your satisfaction with the following areas**

	Very satisfied	Somewhat satisfied	Neutral	Somewhat dissatisfied	Very dissatisfied
Ease of log on process	○	○	○	○	○
Lay out and design	○	○	○	○	○
Ease of navigation	○	○	○	○	○
Accuracy of information	○	○	○	○	○
Usefulness of information	○	○	○	○	○
Quality of discussions	○	○	○	○	○
Quantity of discussions	○	○	○	○	○
Quality of content	○	○	○	○	○
Quantity of content	○	○	○	○	○
Freshness of content	○	○	○	○	○

8. Would you like the group to include more of the following

- [ ] Case studies
- [ ] News
- [ ] Glow meets
- [ ] Discussion topics
- [ ] Resources
- [ ] Links to external websites

Other (please specify)

*9. My glow group is fit for purpose

○ Strongly agree ○ Somewhat agree ○ Neutral ○ Somewhat disagree ○ Strongly disagree

10. Please feel free to comment on any aspect of your glow group

EIS Learning Rep survey Exit this survey

6. Any additional comments you would like to leave

1. If there is anything else you would like to add, such as factors that you think are important in determining how well your glow group works, then please feel free to leave any comments here

2. If you would be willing to be interviewed then please indicate it here

○ Yes ○ No

Appendix 6: EIS Semi-structured Interview Prompts (February 2012)

Just to start I was wondering if you would like to talk about how long you have been a Learning Rep and a general outline of the activities you undertake in this role?

Describe your experiences of using the Original EIS Forum?

How does this compare with your experience of Glow?

Having been without a group since June last year to what extent do you think we actually need an online group?

No- why not? Yes- what would it look like?

Have you been using anything else to communicate with our colleagues in the EIS (i.e. email etc)?

Taking it out with the EIS and the Learning Rep prog have you found any other form of online technology / communication to be useful?

Is there anything else you would like to add about the importance of an online EIS group in the role of a Learning Rep.

Appendix 7: EIS Semi-structured Interview Prompts (June 2013)

Just to start I was wondering if you would like to talk about how long you have been a Learning Rep and a general outline of the activities you undertake in this role?

Have you used the online discussion forum?

Could you describe your experiences?

How would you describe your experiences of taking part in a 'Live-chat'?

Would you like to see this as a regular feature?

How would that work?

Would it encourage you to use the discussions forum more?

Appendix 8: Audit Trail

Intellectual Audit Trail

Starting philosophical position. This research was undertaken from an interpretivist stance.
Following my studies into the differing philosophical research positions during The Open University research training module E891 I concluded this was a stance most likely to elicit a deeper understanding of the complex social issues surrounding online communities.

Questioning the interpretivist position. I wanted to develop an in-depth understanding of complex nature of online communities. My review of the literature this would not be fully achieved through the positivist paradigm. I maintained my position.

Developing a philosophical stance. After reading a variety of research philosophies I reaffirmed my belief that a socially constructed position bounded within the 'verstehen' approach was an appropriate philosophical positioning for this thesis. While this was a time consuming process as I was investigating a socially constructed phenomenon it seemed logically that the best way to investigate this was through a socially constructed approach.

Alternative Methodology. As the research involved investigating the Voluntary closed community of ULRs it seemed logical that adopting a case study approach would be the most suitable course of action. The reasoning being the approach matched the phenomenon under inspection. Participant selection was used to identify an appropriate case. As this was a single case study it seemed imperative to ensure the case selected would provide data to answer the questions.

Evidence Interpretation. Directed content analysis was selected as the most appropriate method in order to build on existing knowledge. Existing theoretical models and coding lists were utilised were available. Data analysis was an iterative process whereby observations informed, surveys which informed interviews. Continual reflection of the evidence was conducted throughout the process.

Theory Development. A narrative approach was adopted. This reflected the nature of the evidence itself as the Case Study drew on data from a ten year time frame.

Physical Audit Trail

Identification of the research problem. As an accredited ULR I was familiar with their online discussion forum. I had also been selected to be a Glow mentor within my authority. At the time of starting my EdD the ULR community was much involved with the implementation of Glow. No one was clear on how this implementation would work and the difficulties the education community would face. Consequently this seemed like an interesting area to investigate.

The research proposal. A proposal was developed and submitted to The Open University to apply for a place on the EdD programme. It included an outline of the study, its aims, objectives, and research questions. The research began in 2010.

Reviewing the literature. An in-depth review of the literature in relation to Glow and online teacher communities was conducted. Despite some initial papers looking at the challenges of Glow little had been done to track a concrete example of how it was being used especially in relation to online teacher communities.

Designing a research framework. A single-explanatory case study approach was adopted.

Data collection. Observations that informed a survey that informed semi-structured interviews formed the primary source of case-study evidence.

Selection of case study participants. As an accredited ULR I had easy access to the online community. This did bring with it additional ethical considerations.

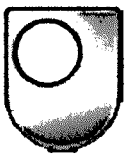
Evidence collection: Observations of 10 years of asynchronous discussions were conducted. Online surveys were distributed and completed by 22 ULRs. 10 ULRs were interviewed.

Data Analysis. Directed content analysis was used to analyse the empirical data. Every post from the start of Phase 1.0 in 2003 to Phase 4.0 in 2013 was analysed in terms of the role of the poster, the content of the discussion, the nature of the discussion and how this mapped onto the conceptual framework. This was then triangulated against information from the surveys and semi-structured interviews.

Narrative report. The key focus of the research was to descrie and explain a voluntary closed online community. The primary questions to be addressed included "Who was posting and what role did they hold within the community?", "What was the focus of each post (linking to purpose of the group)?" and "What was the nature of each post (linking to purpose of the group)?".

Development of new models. Data from the Case Study was mapped onto the individual models that constituted the conceptual framework. Problems were identified. Once it was clear they were not anomalies and could not be resolved into the existing models new models to explain and describe online communities and their members were developed.

Appendix 9: Ethical Approval



The Open University

From Dr Duncan Banks
Chair, The Open University Human Participants and Materials Research Ethics Committee
Research School
Email d.banks@open.ac.uk
Extension 59198

To Victoria Wallace, Open University Library

Subject The experiences of EIS Learning Representatives in the implementation of GLOW: Scotland's national intranet for schools.
Ref HPMEC/2010/#826/1
Date 07 December 2010

Memorandum

This memorandum is to confirm that the above-named research project, as submitted on 12th November 2010, is approved by the Open University Human Participants and Materials Ethics Committee.

At the conclusion of your project, the Committee would like to receive a summary report on the progress of this project, any ethical issues that have arisen and how they have been dealt with.

Duncan Banks
Chair OU HPMEC

Appendix 10: Case Study Consent Form

Dear Colleague

Allow me to introduce myself, my name is Vicki Wallace and I am currently employed as a Support for Learning Teacher in Midlothian where I am the Multi establishment EIS Learning Representative. I am presently in Year Two of my Doctorate in Education with The Open University.

During Year One of my research my focus was to investigate the impact that Glow could have on teacher's identity and professional practice. I asked teacher across Scotland to complete an online survey and many of you kindly contributed. One key finding that emerged was that the teachers of Scotland saw CPD as being central in supporting them to develop a purpose for Glow. (A copy of my year one research can be found on the EIS Learning Representatives Glow site).

As I move on to the next stage of my research I am looking to specifically investigate online teacher communities. It is my intention to collect data through observations of the online forum and a short online survey taking no more than 10 minutes and individual interviews (60 minutes). Completing the survey does not mean that you need to take part in an interview and you are free to withdraw at any stage of the research. It would be entirely up to you to decide how much or little you could contribute. You are at liberty to withdraw at any time without prejudice or negative consequences, non-participation will not affect your status in anyway. It is not anticipated that any participants would be put at risk in anyway.

It is my intention that any interviews would take place at a time and place convenient to the participants, possibly during Learning Representative meetings. I anticipate the data collection phase would begin in the New Year.

At the end of this information sheet there is a consent form for you to complete of you would be willing to be involved. There is also a section to indicate if you would are interested in being involved in this aspect of the study and require further information. Asking for information does not automatically mean that you have to continue to participate

I am afraid I am unable to offer any rewards for taking part, but I will send a copy of any resulting publication to anyone who indicates that they would be interested in receiving this.

Thank you very much in advance for taking part in this study, which will help us understand the experience of teachers in Scotland as we implement GLOW and how EIS Learning Representatives can play a role in this.

Regards

Vicki Wallace (v.wallace@mgfl.net)

Anonymity and confidentiality.

Your identity will remain confidential. It is my intention to aggregate the data in order to gain a representative picture which I hope to write up as part of my academic thesis. This may also appear as an academic article and be presented at academic conferences. In reporting this study I may quote from individual responses but if I do so it will be done so anonymously. I will ensure there is no means of identifying the individual participant. You may also contact me at any point after returning the survey to request your data is removed. I will comply with requests up to the point at which data has been aggregated for analysis. No data will be passed to any third party. I will ensure full compliance with the Data Protection Act and all data will be destroyed on completion of the study.

Contact Details of Supervisor:
Should you wish to discuss any aspect of this research with an independent person you can contact:
Dr Peter Twining (P.Twining@open.ac.uk)
The Open University

Complaints on Ethical Grounds:
Should you wish to make a complaint you can contact:
John Oates (j.m.oates@open.ac.uk),
Chair, Human Participants and Materials Ethics Committee (HPMEC)
Centre for Childhood Development and Learning (CHDL),
Briggs, Walton Hall, Milton Keynes

Title of project: What role can EIS Union Learning Representatives play in facilitating CPD to support the integration of ICT and GLOW within a teacher's pedagogy?

- I have read the Participant Information Sheet and the nature and purpose of the research project has been explained to me. I understand and agree to take part.
- I understand the purpose of the research project and my involvement in it.
- I understand that I may withdraw from the research project at any stage and that this will not affect my status now or in the future.
- I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.
- I understand that I will be audiotaped during the focus group/interview.
- I understand that data will be stored securely at the researcher's place of work (Lasswade High School, Midlothian). The only other person who will have access to the data will be my EdD Supervisor Dr Peter Twining.
- I understand that I may contact the researcher or supervisor if I require further information about the research, and that I may contact the Human Participants and Materials Ethics Committee, The Open University, if I wish to make a complaint relating to my involvement in the research.

Please indicate your willingness or otherwise to take part in this project by ticking the appropriate box and completing the details below. At any time during the research you will be free to withdraw.

□ I am willing to take part in this research, and I give my permission for the data collected to be used anonymously in any written reports or presentations and included in published papers relating to this study. My written consent will be sought separately if I am to be identified in any of the above.

□ I am willing to take part in this research. However, I **do not** give my permission for any data (either words or images) to be collected as a result of my participation.

□ I am **not** willing to take part in this research.

Name: (please print) .....

Contact details: .....

(email) .....

(telephone) .....

Signed:..... **Date**: .....

Appendix 11: K-Means Cluster Analysis

Initial Cluster Centers

	Cluster			
	1	2	3	4
Constructivist	90.00	60.00	95.00	27.50
Traditional	72.73	52.27	38.64	75.00

Iteration History[a]

Iteration	Change in Cluster Centers			
	1	2	3	4
1	11.862	10.628	11.165	16.979
2	.884	1.628	3.833	9.492
3	.718	.743	1.465	4.147
4	.316	.442	.809	1.688
5	.556	.560	.713	1.600
6	.000	.000	.000	.000

a. Convergence achieved due to no or small change in cluster centers. The maximum absolute coordinate change for any center is .000. The current iteration is 6. The minimum distance between initial centers is 34.456.

Cluster Membership

Case No	Cluster	Distance
1	2	5.831
2	2	7.442
3	3	14.647
4	3	2.489
5	1	7.637
6	4	29.533
7	2	8.272
8	1	4.202
9	1	4.685
10	2	5.831
11	1	8.311
12	1	9.705
13	1	9.892
14	3	7.54
15	2	5.863
16	4	9.904
17	4	8.369
18	1	3.329
19	2	4.166
20	3	6.871
21	2	0.699
22	1	9.392
23	1	7.086
24	2	6.425
25	1	8.469
26	2	7.257
27	2	1.983
28	4	4.721
29	3	6.045
30	2	2.683
31	3	17.828
32	1	6.239
33	2	10.961
34	2	0.699
35	1	8.469
36	2	12.632
37	4	6.933
38	4	6.933
39	3	6.893
40	1	6.577
41	3	5.746
42	4	6.933
43	1	15.743
44	2	4.561
45	4	6.037

Cluster Membership

Case No	Cluster	Distance
46	1	7.228
47	4	13.839
48	2	3.316
49	1	3.204
50	2	3.316
51	3	1.484
52	2	5.831
53	2	4.995
54	2	4.995
55	2	5.328
56	2	5.139
57	2	4.075
58	4	16.2
59	4	9.599
60	2	0.699
61	2	8.074
62	1	1.878
63	2	15.794
64	3	6.431
65	2	7.857
66	4	2.051
67	2	2.748
68	3	4.782
69	1	1.596
70	1	6.174
71	3	6.978
72	1	6.132
73	1	7.086
74	1	6.239
75	1	7.178
76	3	2.489
77	2	5.139
78	1	6.456
79	1	6.593
80	1	8.601
81	1	7.637
82	1	9.392
83	1	6.277
84	2	9.057
85	3	21.458
86	3	10.069
87	1	4.058
88	1	5.458
89	3	8.516
90	1	6.792

Cluster Membership

Case No	Cluster	Distance
91	2	5.831
92	1	9.392
93	3	6.893
94	3	6.431
95	2	8.272
96	2	1.983
97	3	9.409
98	1	3.329
99	1	6.456
100	4	6.843
101	4	12.02
102	1	12.283
103	2	1.983
104	3	10.909
105	4	2.982
106	3	6.431
107	1	4.058
108	1	3.957
109	2	5.577
110	2	10.293
111	2	7.491
112	1	11.687
113	2	3.58
114	1	6.593
115	2	9.989
116	2	4.458
117	1	9.1
118	3	7.54
119	2	10.293
120	3	17.658
121	2	1.938
122	2	7.454
123	3	2.489
124	3	4.587
125	1	6.593
126	1	6.174
127	3	5.746
128	1	4.939
129	2	5.328
130	3	6.871
131	2	6.178
132	4	2.051
133	3	7.897
134	2	5.19
135	3	11.917

Cluster Membership

Case No	Cluster	Distance
136	3	12.781
137	1	8.469
138	2	9.743
139	2	26.857
140	3	6.893
141	2	5.19
142	1	6.132
143	3	4.782

Final Cluster Centers

	Cluster			
	1	2	3	4
Constructivist	78.91	64.44	83.52	57.03
Traditional	67.44	60.95	52.27	74.72

Distances between Final Cluster Centers

Cluster	1	2	3	4
1		15.865	15.851	23.060
2	15.865		20.956	15.636
3	15.851	20.956		34.715
4	23.060	15.636	34.715	

ANOVA

	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
Constructivist	4262.460	3	39.388	139	108.217	.000
Traditional	2324.447	3	33.489	139	69.409	.000

The F tests should be used only for descriptive purposes because the clusters have been chosen to maximize the differences among cases in different clusters. The observed significance levels are not corrected for this and thus cannot be interpreted as tests of the hypothesis that the cluster means are equal.

Number of Cases in each Cluster

Cluster	1	46.000
	2	49.000
	3	32.000
	4	16.000
Valid		143.000
Missing		.000

Appendix 12: Chi- Squared Test Association (Teacher Belief Profile – all groups included)

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
constructivist * traditional	143	100.0%	0	0.0%	143	100.0%

constructivist * traditional Crosstabulation

			traditional		Total
			high	low	
constructivist	high	Count	46	32	78
		Expected Count	33.8	44.2	78.0
		% within constructivist	59.0%	41.0%	100.0%
		% within traditional	74.2%	39.5%	54.5%
		% of Total	32.2%	22.4%	54.5%
	low	Count	16	49	65
		Expected Count	28.2	36.8	65.0
		% within constructivist	24.6%	75.4%	100.0%
		% within traditional	25.8%	60.5%	45.5%
		% of Total	11.2%	34.3%	45.5%
Total		Count	62	81	143
		Expected Count	62.0	81.0	143.0
		% within constructivist	43.4%	56.6%	100.0%
		% within traditional	100.0%	100.0%	100.0%
		% of Total	43.4%	56.6%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	17.043[a]	1	.000		
Continuity Correction[b]	15.673	1	.000		
Likelihood Ratio	17.555	1	.000		
Fisher's Exact Test				.000	.000
N of Valid Cases	143				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 28.18.
b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.345	.000
	Cramer's V	.345	.000
N of Valid Cases		143	

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.

Appendix 13: Chi- Squared Test Association (Teacher Belief Profile – excluding Low Const-High Trad Cluster)

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
constructivist * traditional	127	100.0%	0	0.0%	127	100.0%

constructivist * traditional Crosstabulation

			traditional		Total
			high	low	
constructivist	high	Count	46	32	78
		Expected Count	28.3	49.7	78.0
		% within constructivist	59.0%	41.0%	100.0%
		% within traditional	100.0%	39.5%	61.4%
		% of Total	36.2%	25.2%	61.4%
	low	Count	0	49	49
		Expected Count	17.7	31.3	49.0
		% within constructivist	0.0%	100.0%	100.0%
		% within traditional	0.0%	60.5%	38.6%
		% of Total	0.0%	38.6%	38.6%
Total		Count	46	81	127
		Expected Count	46.0	81.0	127.0
		% within constructivist	36.2%	63.8%	100.0%
		% within traditional	100.0%	100.0%	100.0%
		% of Total	36.2%	63.8%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	45.308[a]	1	.000		
Continuity Correction[b]	42.791	1	.000		
Likelihood Ratio	60.683	1	.000		
Fisher's Exact Test				.000	.000
N of Valid Cases	127				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 17.75.
b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.597	.000
	Cramer's V	.597	.000
N of Valid Cases		127	

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.

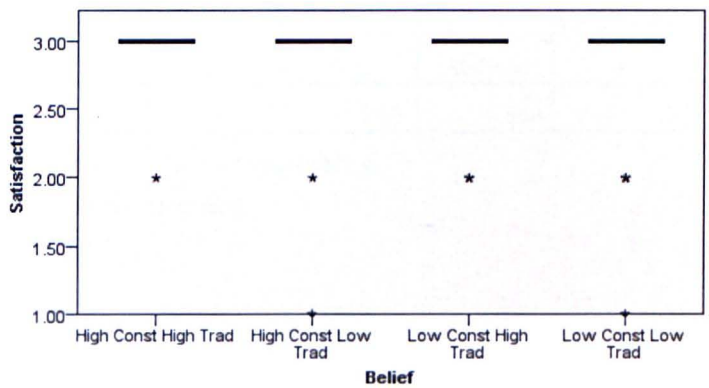
Appendix 14: Kruskal-Wallis Test Impact of ICT on professional context and student learning

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Satisfaction is the same across categories of Belief.	Independent-Samples Kruskal-Wallis Test	.172	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Independent-Samples Kruskal-Wallis Test



Total N	143
Test Statistic	5.001
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.172

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Satisfaction * Belief	143	100.0%	0	0.0%	143	100.0%

Median

Report

Median

Belief	Satisfaction
High Const High Trad	3.0000
High Const Low Trad	3.0000
Low Const High Trad	3.0000
Low Const Low Trad	3.0000
Total	3.0000

Appendix 15: Paired-samples t-test on Phase 1.0 Threads and posts

Paired-samples t-test on Phase 1.0 Threads

Explore

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
difference	5	100.0%	0	0.0%	5	100.0%

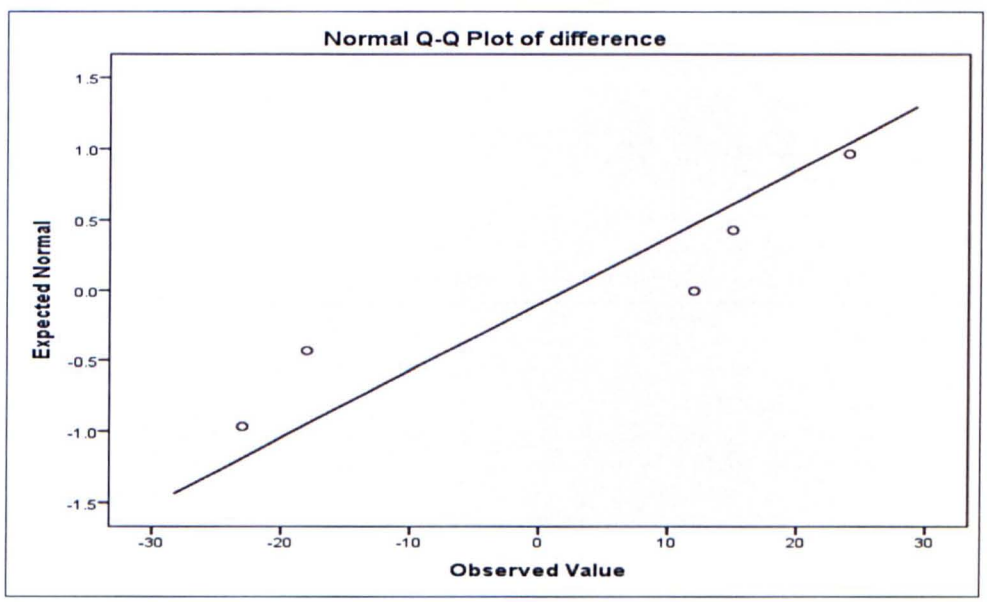
Tests of Normality

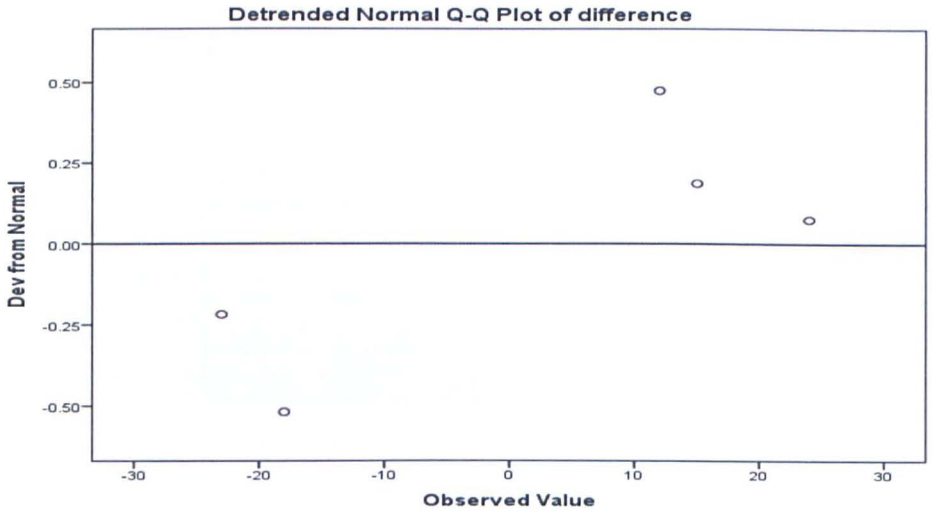
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
difference	.282	5	.200*	.864	5	.244

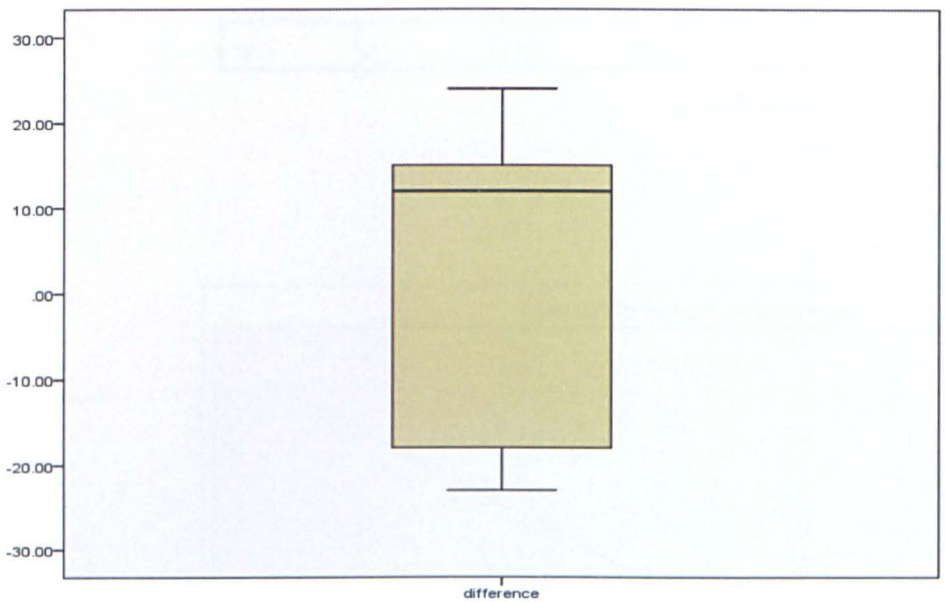
*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Difference




Detrended Normal Q-Q Plot of difference
Dev from Normal
0.50
0.25
0.00
-0.25
-0.50
-30
-20
-10
0
10
20
30
Observed Value


30.00
20.00
10.00
.00
-10.00
-20.00
-30.00
difference

T-test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	number of threads feb to jul	31.0000	5	16.50757	7.38241
	no of threads aug to jan	29.0000	5	9.66954	4.32435

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	number of threads feb to jul & no of threads aug to jan	5	-.246	.690

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	number of threads feb to jul - no of threads aug to jan	2.00000	21.08317	9.42868	-24.17821	28.17821	.212	4	.842

Paired-samples t-test on Phase 1.0 Posts

Explore

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
difference	5	100.0%	0	0.0%	5	100.0%

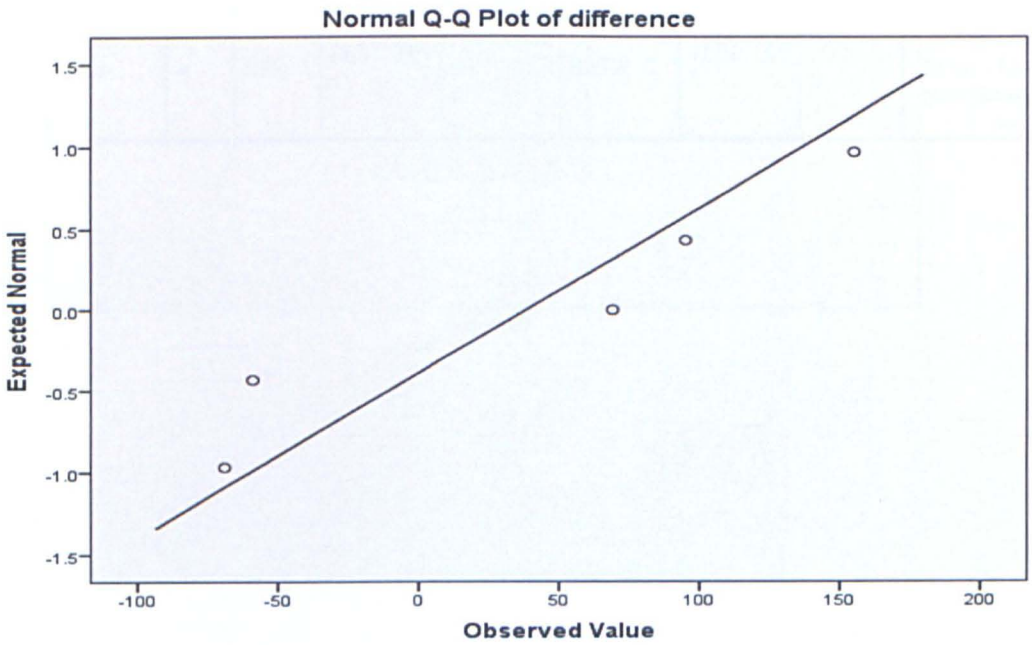
Tests of Normality

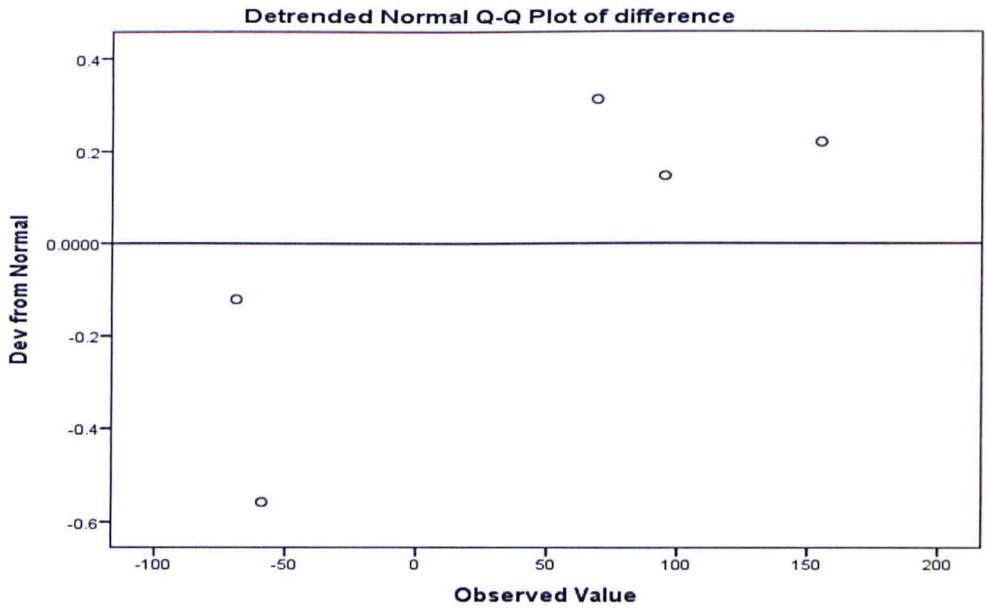
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
difference	.238	5	.200*	.893	5	.373

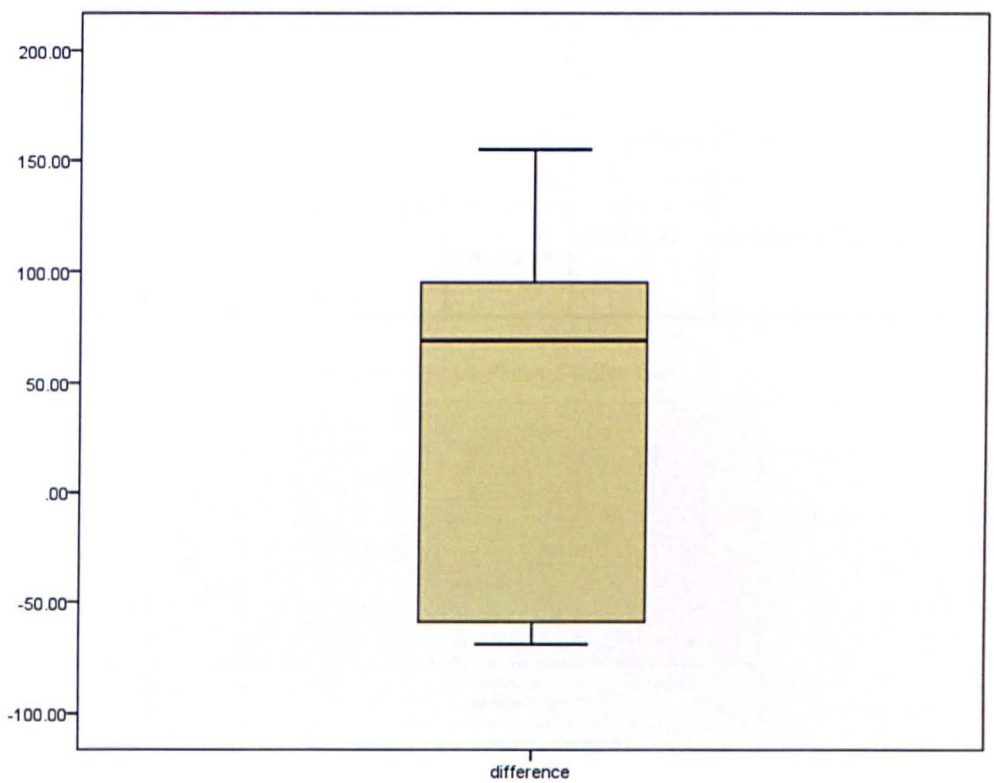
*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Difference




Detrended Normal Q-Q Plot of difference
Dev from Normal
0.4
0.2
0.0000
-0.2
-0.4
-0.6
-100
-50
0
50
100
150
200
Observed Value


200.00
150.00
100.00
50.00
.00
-50.00
-100.00
difference

T-test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	post feb jul	151.8000	5	87.71089	39.22550
	post aug jan	113.6000	5	64.33351	28.77082

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	post feb jul & post aug jan	5	.190	.760

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	post feb jul - post aug jan	38.20000	98.43373	44.02090	-84.02162	160.42162	.868	4	.434

Appendix 16: Phase 1.0, Length of Service and Satisfaction with Quantity of Discussion

Question: Please rate your satisfaction with the following areas - Quantity of discussions.

Descriptive Statistics.

	Mean	Standard Deviation	25th Quartile	50th Quartile (Median)	75th Quartile
Phase 1.0	3.23	0.92	2.75	3.50	4.00

N=22

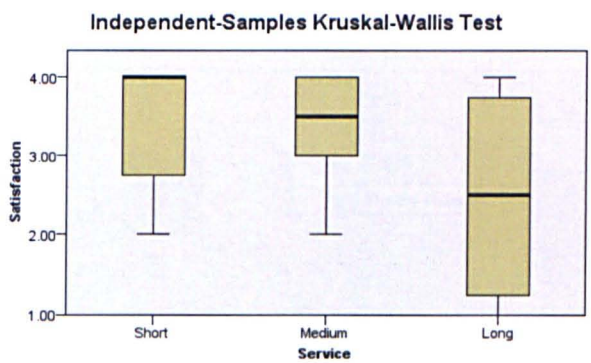
Kruskal-Wallis Test Length of Service and Satisfaction with Quantity of Discussion.

Nonparametric tests

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Satisfaction is the same across categories of Service.	Independent-Samples Kruskal-Wallis Test	.300	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	22
Test Statistic	2.405
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.300

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Satisfaction * Service	22	100.0%	0	0.0%	22	100.0%

Median

Report

Median

Service	Satisfaction
Short	4.0000
Medium	3.5000
Long	2.5000
Total	3.5000

Appendix 17: Phase 1.0, Length of Service and Satisfaction with Quality of Discussion

Question: Please rate your satisfaction with the following areas - Quality of discussions.

Descriptive Statistics.

	Mean	Standard Deviation	25th Quartile	50th Quartile (Median)	75th Quartile
Phase 1.0	3.45	0.91	3.00	4.00	4.00

N=22

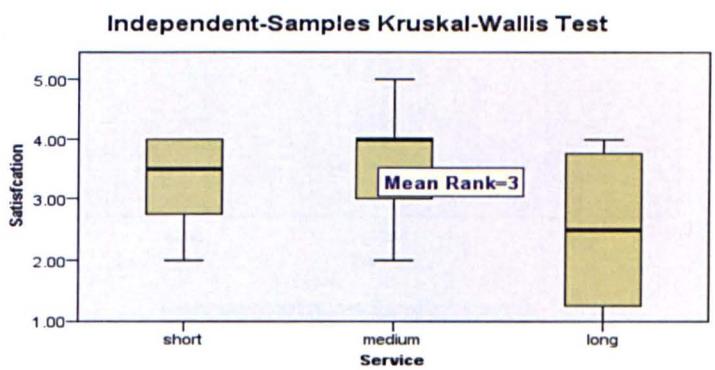
Kruskal-Wallis Test Length of Service and Satisfaction with Quality of Discussion.

Nonparametric tests

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Satisfcation is the same across categories of Service.	Independent-Samples Kruskal-Wallis Test	.228	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	22
Test Statistic	2.955
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.228

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Satisfcation * Service	22	100.0%	0	0.0%	22	100.0%

Median

Report

Service	Satisfcation
short	3.5000
medium	4.0000
long	2.5000
Total	4.0000

Appendix 18: Phase 1.0, Length of Service and Satisfaction with Overall Satisfaction

Question: Please rate your satisfaction with the following areas – Overall Satisfaction.

Descriptive Statistics.

	Mean	Standard Deviation	25th Quartile	50th Quartile (Median)	75th Quartile
Phase 1.0	3.59	1.09	3.00	4.00	4.00

N=22

Kruskal-Wallis Test Length of Service and Satisfaction with Quality of Discussion.

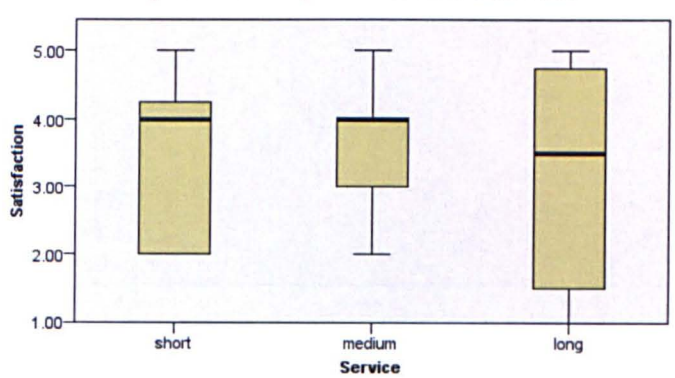
Nonparametric tests

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Satisfaction is the same across categories of Service.	Independent-Samples Kruskal-Wallis Test	.946	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Independent-Samples Kruskal-Wallis Test



Total N	22
Test Statistic	.112
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.946

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Satisfaction * Service	22	100.0%	0	0.0%	22	100.0%

Median

Report

Service	Satisfaction
short	4.0000
medium	4.0000
long	3.5000
Total	4.0000

Appendix 19: Phase 1.0, Satisfaction and Frequency of reported visits

Question: Please indicate how often you logged on to the Original Forum and Glow.

Descriptive Statistics.

	Mean	Standard Deviation	25th Quartile	50th Quartile (Median)	75th Quartile
Phase 1.0	2.31	0.83	1.75	3.00	3.00

N=22

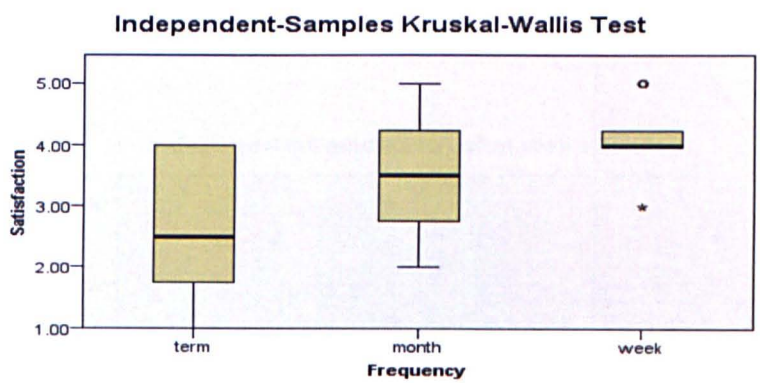
Kruskal-Wallis Test Length of Service and Satisfaction with Quality of Discussion.

Nonparametric test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Satisfaction is the same across categories of Frequency.	Independent-Samples Kruskal-Wallis Test	.044	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	22
Test Statistic	6.245
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.044

1. The test statistic is adjusted for ties.

Means

Case Processing Summary

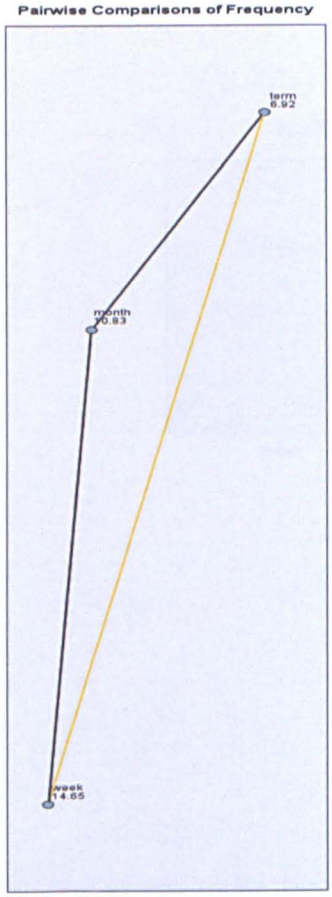
	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Satisfaction * Frequency	22	100.0%	0	0.0%	22	100.0%

Medians

Report

Frequency	Satisfaction
term	2.5000
month	3.5000
week	4.0000
Total	4.0000

Pairwise Comparisons of Frequency



Each node shows the sample average rank of Frequency.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
term-month	-3.917	3.488	-1.123	.261	.784
term-week	-7.733	3.120	-2.479	.013	.040
month-week	-3.817	3.120	-1.223	.221	.664

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Appendix 20: Phase 1.0, Fitness for purpose

Question: To what extent do you agree that the group is fit for purpose.

Descriptive Statistics.

	Mean	Standard Deviation	25th Quartile	50th Quartile (Median)	75th Quartile
Phase 1.0	3.59	1.09	3.00	4.00	5.00

N=22

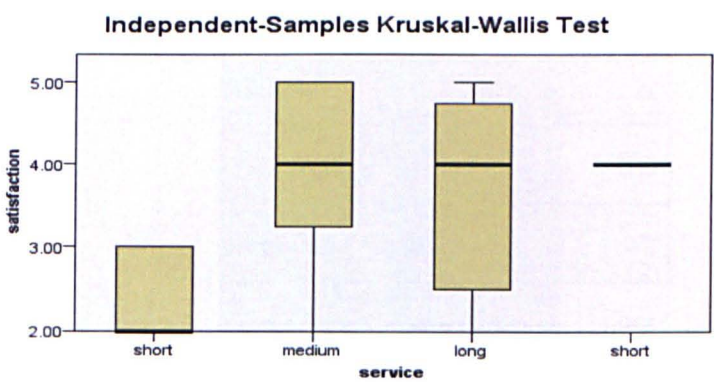
Kruskal-Wallis Test Length of Service and Satisfaction with Fitness for purpose.

Nonparametric test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of satisfaction is the same across categories of service.	Independent-Samples Kruskal-Wallis Test	.161	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	22
Test Statistic	5.147
Degrees of Freedom	3
Asymptotic Sig. (2-sided test)	.161

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
satisfaction * service	22	100.0%	0	0.0%	22	100.0%

Median

Report

service	satisfaction
short	2.0000
medium	4.0000
long	4.0000
short	4.0000
Total	4.0000

Appendix 21: Phase 2.0 Questionnaire Statistics

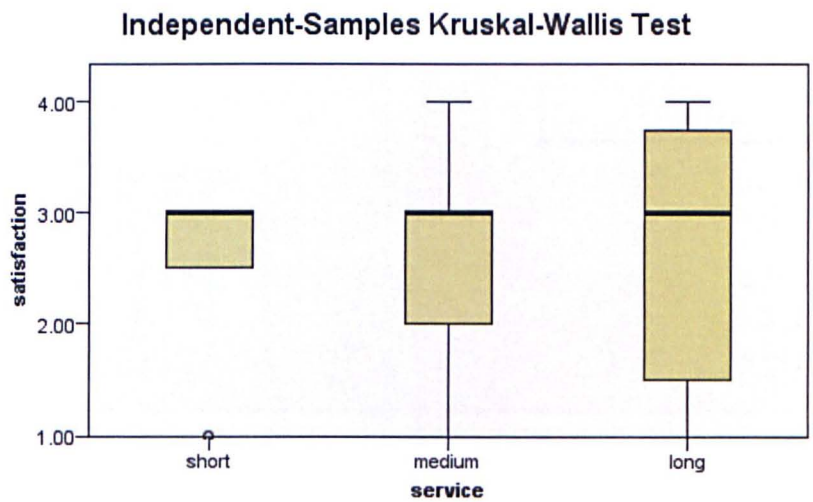
Kruskal-Wallis Test Length of Service and Satisfaction with Quality of Discussion.

Nonparametric tests

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of satisfaction is the same across categories of service.	Independent-Samples Kruskal-Wallis Test	.956	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	22
Test Statistic	.090
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.956

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
satisfaction * service	22	100.0%	0	0.0%	22	100.0%

Median

Report

satisfaction

service	Std. Deviation	Median
short	.81650	3.0000
medium	.86603	3.0000
long	1.25831	3.0000
Total	.88273	3.0000

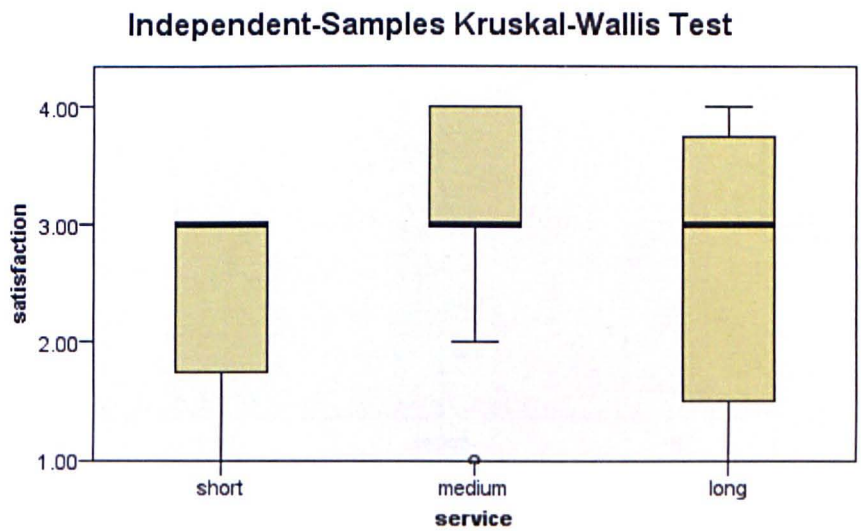
Kruskal-Wallis Test Length of Service and Satisfaction with Quantity of Discussion.

Nonparametric tests

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of satisfaction is the same across categories of service.	Independent-Samples Kruskal-Wallis Test	.956	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	22
Test Statistic	2.650
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.266

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
satisfaction * service	22	100.0%	0	0.0%	22	100.0%

Median

Report

Median

service	satisfaction
short	3.0000
medium	3.0000
long	3.0000
Total	3.0000

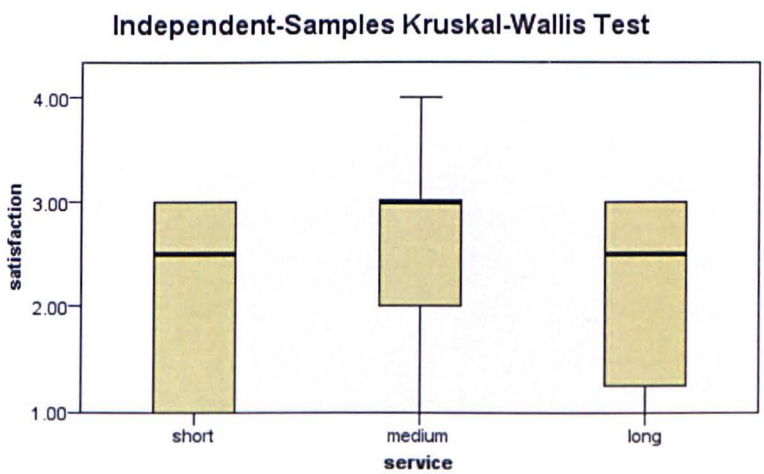
Kruskal-Wallis Test Length of Service and Overall Satisfaction.

Nonparametric tests

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of satisfaction is the same across categories of service.	Independent-Samples Kruskal-Wallis Test	.614	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	22
Test Statistic	.974
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.614

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
satisfaction * service	22	100.0%	0	0.0%	22	100.0%

Median

Report

Median

service	satisfaction
short	2.5000
medium	3.0000
long	2.5000
Total	3.0000

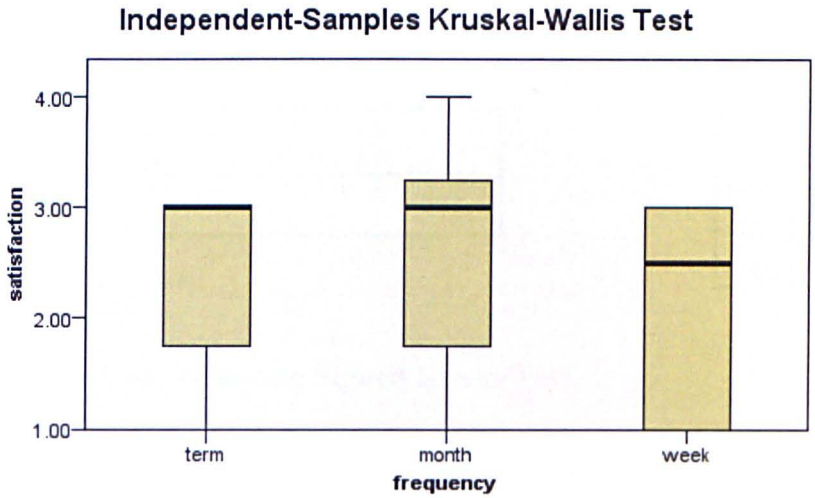
Kruskal-Wallis Test Overall Satisfaction and Frequency of visits.

Nonparametric tests

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of satisfaction is the same across categories of frequency.	Independent-Samples Kruskal-Wallis Test	.587	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	22
Test Statistic	1.066
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.587

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
satisfaction * frequency	22	100.0%	0	0.0%	22	100.0%

Median

Report

Median

frequency	satisfaction
term	3.0000
month	3.0000
week	2.5000
Total	3.0000

Appendix 22: Phase 1.0 / Phase 2.0 Questionnaire Comparisons

Quantity of Discussion: Wilcoxon Signed Ranks Test.

		N	Mean Rank	Sum of Ranks
Response for Phase 2.0 - Response for Phase 1.0	Negative Ranks	10[a]	6.80	68.00
	Positive Ranks	2[b]	5.00	10.00
	Ties	10[c]		
	Total	22		

a. Response for Phase 2.0 < Response for Phase 1.0
b. Response for Phase 2.0 > Response for Phase 1.0
c. Response for Phase 2.0 = Response for Phase 1.0

Test Statistics.

	Response for Phase 2.0 - Response for Phase 1.0
Z	-2.389[b]
Asymp. Sig. (2-tailed)	.017

a. Wilcoxon Signed Ranks Test
b. Based on positive ranks.

Quality of Discussions: Wilcoxon Signed Ranks Test.

		N	Mean Rank	Sum of Ranks
Response for Phase 2.0 - Response for Phase 1.0	Negative Ranks	9[a]	6.78	61.00
	Positive Ranks	3[b]	5.67	17.00
	Ties	10[c]		
	Total	22		

a. Response for Phase 2.0 < Response for Phase 1.0
b. Response for Phase 2.0 > Response for Phase 1.0
c. Response for Phase 2.0 = Response for Phase 1.0

Test Statistics.

	Response for Phase 2.0 - Response for Phase 1.0
Z	-1.768[b]
Asymp. Sig. (2-tailed)	.077

a. Wilcoxon Signed Ranks Test
b. Based on positive ranks.

Overall Satisfaction: Wilcoxon Signed Ranks Test.

		N	Mean Rank	Sum of Ranks
Response for Phase 2.0 - Response for Phase 1.0	Negative Ranks	13[a]	7.81	101.50
	Positive Ranks	1[b]	3.50	3.50
	Ties	8[c]		
	Total	22		

a. Response for Phase 2.0 < Response for Phase 1.0

b. Response for Phase 2.0 > Response for Phase 1.0

c. Response for Phase 2.0 = Response for Phase 1.0

Test Statistics.

	Response for Phase 2.0 - Response for Phase 1.0
Z	-3.131[b]
Asymp. Sig. (2-tailed)	.002

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

Frequency of visits: Wilcoxon Signed Ranks Test.

		N	Mean Rank	Sum of Ranks
Response for Phase 2.0 - Response for Phase 1.0	Negative Ranks	13[a]	7.81	101.50
	Positive Ranks	1[b]	3.50	3.50
	Ties	8[c]		
	Total	22		

a. Response for Phase 2.0 < Response for Phase 1.0

b. Response for Phase 2.0 > Response for Phase 1.0

c. Response for Phase 2.0 = Response for Phase 1.0

Test Statistics.

	Response for Phase 2.0 - Response for Phase 1.0
Z	-3.170[b]
Asymp. Sig. (2-tailed)	.002

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

Fit for purpose: Wilcoxon Signed Ranks Test.

		N	Mean Rank	Sum of Ranks
Response for Phase 2.0 - Response for Phase 1.0	Negative Ranks	13[a]	8.46	110.00
	Positive Ranks	2[b]	5.00	10.00
	Ties	7[c]		
	Total	22		

a. Response for Phase 2.0 < Response for Phase 1.0

b. Response for Phase 2.0 > Response for Phase 1.0

c. Response for Phase 2.0 = Response for Phase 1.0

Test Statistics.

	Response for Phase 2.0 - Response for Phase 1.0
Z	-2.914[b]
Asymp. Sig. (2-tailed)	.002

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

Ease of navigation: Wilcoxon Signed Ranks Test.

		N	Mean Rank	Sum of Ranks
Response for Phase 2.0 - Response for Phase 1.0	Negative Ranks	16[a]	10.66	170.50
	Positive Ranks	3[b]	6.50	19.50
	Ties	3[c]		
	Total	22		

a. Response for Phase 2.0 < Response for Phase 1.0

b. Response for Phase 2.0 > Response for Phase 1.0

c. Response for Phase 2.0 = Response for Phase 1.0

Test Statistics.

In the final analysis we can investigate if these differences are statistically different.

	Response for Phase 2.0 - Response for Phase 1.0
Z	-3.137[b]
Asymp. Sig. (2-tailed)	.002

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.